

United States Department of the Interior Bureau of Land Management

Environmental Assessment

DOI-BLM-CO-S010-2014-0003

June 2014

Summit Point Federal 1 Well Pad, Well Pad Access Road, and Gathering Pipeline ROW

Location: Bureau of Land Management Lands
San Miguel County, Colorado

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LIST OF ACRONYMS

AO	Authorized Officer
APD	Application for Permit to Drill
ATV	All-terrain vehicle
BLM	Bureau of Land Management
BMP	best management practice
CCI	CCI Paradox Upstream LLC
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COAs	Conditions of Approval
COGCC	Colorado Oil and Gas Conservation Commission
DOT	Department of Transportation
Ecosphere	Ecosphere Environmental Services
EA	Environmental Assessment
FEIS	Final Environmental Impact Statement
Grasslands	Grassland Consulting, Inc.
GRI	Grand River Institute
IDT	Interdisciplinary Team
KOP	key observation point
MSDS	Material Safety Data Sheets
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NWP	Nationwide Permit
OSHA	Occupation Safety and Health Association
P.L.	Public Law
RMP	Resource Management Plan
SPCC	Spill Prevention Control and Countermeasure
SWMP	Stormwater Management Plan
T&E	threatened and endangered
TUA	temporary use area
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VRI	Visual Resource Inventory
WSP	Western Slope Paleontological Services, Ltd.

Summit Point Federal 1 Well Pad, Well Pad Access Road, and Gathering Pipeline

(DOI-BLM-CO-S010-2014-0003)

1. Purpose and Need

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the development of an oil and natural gas well and associated infrastructure (Proposed Action), as proposed by CCI Paradox Upstream LLC (CCI). The EA is a site-specific analysis of potential effects that could result with implementation of the Proposed Action or alternatives to the Proposed Action. The EA assists the Bureau of Land Management (BLM) in project planning and ensuring compliance with the National Environmental Policy Act (NEPA).

This chapter presents the purpose and need for the Proposed Action as well as the relevant issues, including those elements of the human environment that could be affected by the implementation of the Proposed Action. The potential environmental effects of the alternatives considered in detail for each of the identified issues are analyzed in Chapter 4. The No Action alternative, which describes the baseline, is presented for comparison.

1.2 Background

CCI has submitted an Application for Permit to Drill (APD) to Tres Rios Field Office BLM for an oil and natural gas well and associated infrastructure on BLM land in San Miguel County, Colorado (Figure 1). CCI has submitted an SF-299 "Application for Transportation and Utility Systems and Facilities on Federal Lands," and has received a casefile number for their proposed 6-inch gathering pipeline right-of-way (ROW) (COC-76407). BLM will be processing CCI's pipeline ROW Application in tandem with the Oil and Gas APD associated with this project.

The lease information, legal description, and well depth are provided in Table 1. Unless otherwise stated, the "project area" consists of the well pad, well pad access road, pipeline ROW, and approximately ½-mile buffer around all project components.

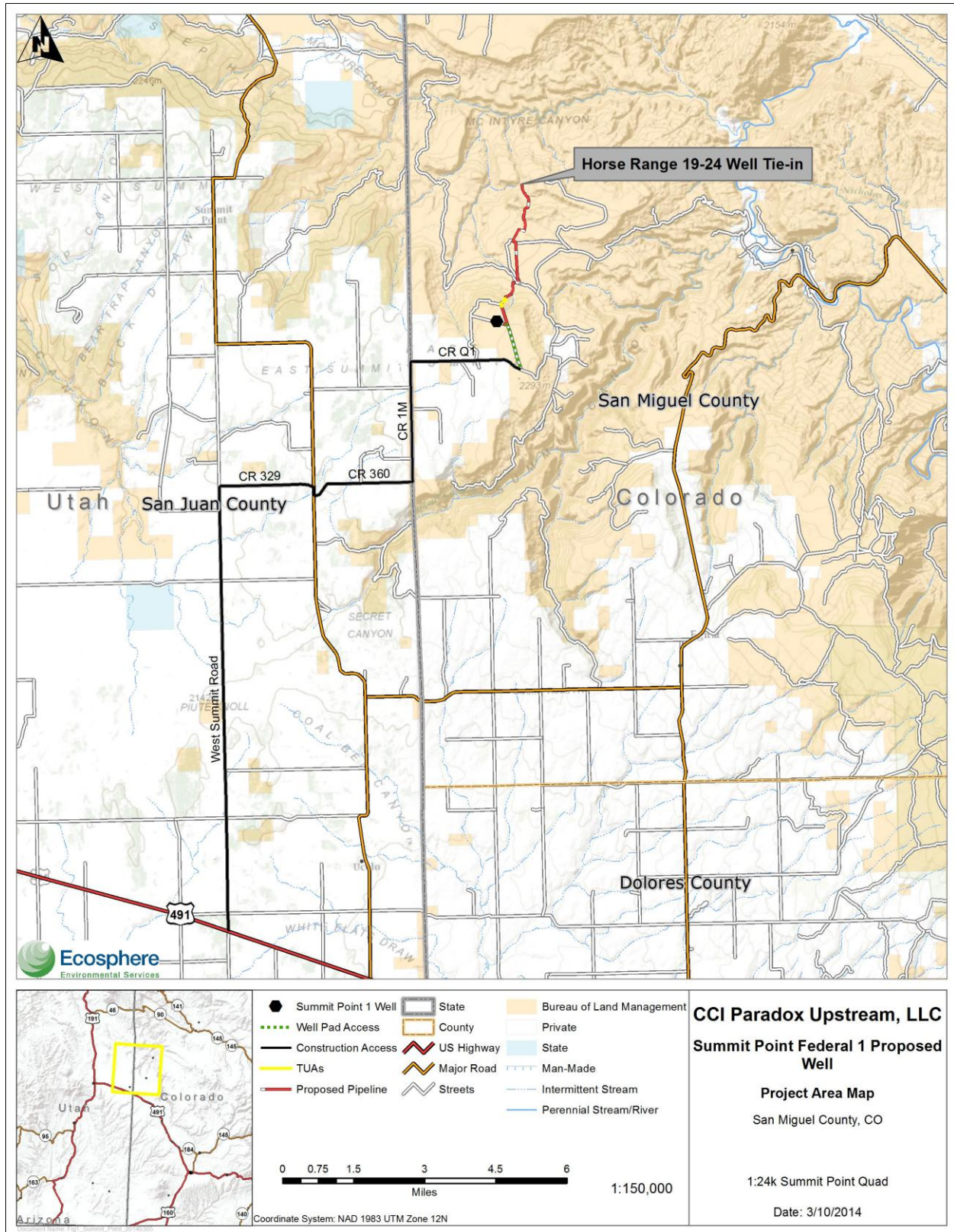


Figure 1. Project Area Map

Table 1. Lease Summary and Legal Description for Proposed Well Location

Well Name	Mineral Lease #	Lease Stipulations	Surface Location (Ownership)	Bottom Hole Target Formation (Mineral Ownership)	Vertical Depth (feet)
Summit Point Federal 1	COC-069518	Standard lease terms and conditions	T43N, R19W, NE1/4 NW1/4 S6 956' FNL & 1319' FWL (BLM)	Leadville (BLM)	9,971

Notes: FNL = From North Line; FWL = From West Line; FSL = From South Line

1.3 Need for the Proposed Action

CCI filed an APD with the BLM Tres Rios Field Office on August 9, 2013. The BLM's need is to respond to the applicant's APD and ROW Application for the proposed well pad and pipeline in accordance with the Mineral Leasing Act of 1920, as amended (30 United States Code [U.S.C.] 181 et seq.), by Title V of the Federal Land Policy and Management Act of 1976, as amended (43 U.S.C. 1761-1771), and the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

The BLM would consider the Proposed Action in a manner that: (1) avoids or reduces effects on resources and activities, as identified in the RMP (BLM 1985); (2) best meets the objectives of the BLM; (3) is consistent with the lease rights granted to the applicant; and (4) prevents unnecessary or undue degradation of public lands.

1.4 Purpose(s) of the Proposed Action

The purpose of the Proposed Action is to produce commercial quantities of oil and gas from CCI's Federal Lease COC-069518, consistent with the lease rights granted (Figure 2). Oil and gas exploration and development is recognized as an appropriate use of public lands in the San Juan/San Miguel Planning Area Record of Decision/Resource Management Plan (BLM 1985).

1.5 Decision to be Made

The BLM will decide whether or not to approve the APD and ROW Application, and if so, under what terms and conditions.

1.5.1 Conformance with BLM Land Use Plan(s)

The Proposed Action is subject to and has been reviewed for conformance with the following land use plans and amendments (43 CFR 1610.5, BLM 1617.3):

Plan: San Juan/San Miguel Planning Area Resource Management Plan (BLM 1985)
Date Approved: September 1985
Page Number: Page 17—"BLM actively encourages and facilitates the development by private industry of public land mineral resources so national and local needs are satisfied and economically and environmentally sound exploration,

Amendment: extraction, and reclamation practices are provided.”
Record of Decision, San Juan/San Miguel Planning Area Resource Management Plan Amendment (BLM 1991) (The Final Environmental Impact Statement [FEIS] is also known as the Amendment to the RMP)

Date Approved: October 1991

Page Number: Page 11—“Facilitate orderly, economic, and environmentally sound exploration and development of oil and gas resources using balanced multiple-use management.” Also, Page 2-2 of the FEIS states “that an EA would be completed on each APD or group of APDs in addition to this EIS.”

The Proposed Action would fulfill the objective and intent of the 1985 San Juan/San Miguel RMP and the 1991 Amendment that public land mineral resources are developed in an environmentally sound way, and thus is in conformance with the RMP.

1.6 Relationship to Statutes, Regulations, or Other Plans

Exploration and development of federal oil and gas leases by private industry is an integral part of the BLM’s oil and gas leasing program under authority of the Mineral Leasing Act of 1920, as amended, the Mining and Minerals Policy Act of 1970 (30 U.S.C. 21), the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1761-1777), the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (30 U.S.C. 195 et seq.), and applicable BLM Onshore Oil and Gas Orders (43 CFR 3160).

The BLM regulates oil and gas development to minimize environmental effects to public lands as required by, but not limited to, the following Federal Laws:

- The Mineral Leasing Act of 1920, as amended (30 U.S.C. 181 et seq.)
- The Mining and Minerals Policy Act of 1970 (30 U.S.C. 21)
- The Federal Land Policy and Management Act of 1976, as amended (43 U.S.C. 1761-1777)
- The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (30 U.S.C. 195 et seq.)
- The Endangered Species Act of 1973 (Public Law [P.L.] 94-325)
- The Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712)
- The Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. 668-668d)
- The Federal Water Pollution Control Act of 1948, as amended (33 U.S.C. Chap. 26)
- The Clean Air Act of 1963, as amended (P.L. 88-206)
- Clean Water Act of 1972, amended 1977
- The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. Chap. 103)

- The Antiquities Act of 1906, as amended (P.L. 52-209)
- The National Historic Preservation Act of 1966, as amended (P.L. 89-665)
- The Archaeological and Historic Preservation Act of 1974 (P.L. 86-253)
- The Archaeological Resources Protection Act of 1979, as amended (P.L. 96-95)
- The American Indian Religious Freedom Act of 1978, as amended (42 U.S.C. 1996)
- The Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601)
- Executive Order 12898 of 1994, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”
- The National Environmental Policy Act of 1969
- The National Trails System Act of 1969, as amended (P.L. 90-543)

This EA considers the requirements of these laws and implementing regulations, as applicable, as part of the Proposed Action. The Proposed Action, including associated applicant-committed Design Features, complies with the laws and implementing regulations indicated above.

Table 2 provides a summary of federal, state, and local approvals/permits relevant to the Proposed Action.

Table 2. Potential Authorizations, Permits, Reviews, and Approvals

Permit or Approval	Entity
Federal	
Application for Permit to Drill	Bureau of Land Management
Pipeline Right of Way Grant	Bureau of Land Management
State	
Forms 1, 2, 2A, and 3	Colorado Oil and Gas Conservation Commission
Local	
Access Approach and Road Use Permit	San Miguel County, Colorado
Road Use Permit	San Juan County, Utah

1.6.1 Conformance with Colorado Standards for Public Land Health

In February 1997, the Colorado BLM’s standards for public land health were approved by the Secretary of the Interior. The standards relate to all uses of public lands and a finding for each standard must be included in each EA. The five standards for protecting Public Land Health are:

1. Ensure healthy upland soils.
2. Protect and improve riparian systems.
3. Maintain healthy, productive, native plant and animal communities.
4. Maintain or enhance threatened or endangered species and their habitats.

5. Ensure water quality meets minimum Water Quality Standards established by the State of Colorado.

The standards describe conditions needed to sustain public land health and relate to all uses of the public lands. The standards are applied on a landscape scale and they relate to the potential overall health and sustainability of the landscape. Additional information on the standards and guidelines can be found at the Colorado BLM website: <http://www.co.blm.gov/standguide.htm>. Findings for each of the specific project study area standards (if applicable) are described in the relevant resource description in Chapter 3.

1.7 Scoping and Identification of Issues

Colorado Oil and Gas Conservation Commission (COGCC), Colorado Parks and Wildlife, and San Miguel County officials were invited to the various on-site visits for the project. Their comments were taken into consideration when developing the Proposed Action. The Proposed Action was listed on the BLM's online NEPA Register (http://www.blm.gov/co/st/en/BLM_Information/nepa/TRFO_NEPA.html) since October 1, 2013.

The Interdisciplinary Team (IDT) assigned to the project completed a preliminary analysis of all resource areas, including consideration of the issues identified at the on-site visits. The administrative record includes the IDT checklist for the project and identifies eight issue statements that are listed below requiring further detailed analysis:

- What are the effects of the Proposed Action on cultural resources and Native American religious concerns?
- What are the effects of the Proposed Action on migratory birds?
- Would digging a blooie pit or burying pipelines affect paleontological resources?
- Would recreation and access along area roads during the hunting season be affected?
- What is the soil erosion potential of the well pad, buried pipeline, and surface-installed pipeline?
- Would the Proposed Action affect threatened, endangered, or candidate species or critical habitat?
- What visual effect would the pipeline cause and would the Proposed Action meet the BLM Visual Resource Inventory (VRI) Class designation?
- Would the Proposed Action affect surface waters, including intermittent streams and stock ponds?

1.8 Issues Considered but Eliminated from Further Analysis

The IDT identified 10 resource areas (identified in the eight issue statements listed above) that require detailed analysis in Chapters 3 and 4. The remainder of the resource areas have been eliminated from further analysis. The resources eliminated and reasoning for their exclusion are detailed below:

- Air quality/greenhouse gas emissions – The applicant prepared an emission inventory for the project to compare/contrast how the Proposed Action fits into the RMP analysis for cumulative effects.
- Fuels/fire management – Applicant committed Design Features, including a fire response plan and an onsite fire response trailer, are adequate environmental protections.
- Noxious weeds – Applicant committed Design Features (including weed treatments and control, and power washing equipment before entering the project area) are adequate environmental protections.
- Lands/access – Effects of the off-lease pipeline ROW are analyzed as part of the Proposed Action.
- Lands with wilderness characteristics – The project area is near two wilderness characteristic Inventory Units, neither of which were found to have wilderness characteristics during a 2012 inventory.
- Mineral resources/ geology/ energy production – Surface effects would be avoided through implementation of Design Features.
- Rangeland health standards – Forage loss within the Summit Point and Slickrock grazing allotments would be insignificant and short-term.
- Socio-economics – Measurable effects on the economy from a single exploratory well would not be expected.
- Special status animal species – Although special status species may be present in the project area, no nests, roosts or hibernacula would be affected by the Proposed Action. BLM sensitive species may experience displacement during construction, but would not cause species to trend toward federal listing from implementation of the Proposed Action.
- Special status plant species – No special status plants were observed during 2013 surveys of the project area. A small area (0.8 acre adjacent to the TUAs) was not surveyed. Given the extensive negative surveys for the Proposed Action but small area not surveyed, individual plants may be affected but the implementation of the Proposed Action would not cause the species to trend toward federal listing.

- Vegetation – The minimal loss of piñon-juniper (*Pinus edulis-Juniperus osteosperma*) woodland and sagebrush (*Artemisia tridentata*) steppe would be insignificant and offset by reclamation using BLM-approved native seed mixes.
- Wastes (hazardous or solid) – The use of closed-loop drilling, disposal of contaminated cuttings, and on-site trash and sewage facilities would reduce effects from wastes.
- Wildlife-terrestrial – Measurable effects to terrestrial wildlife from the Proposed Action would not be expected.

2. Description of Alternatives, Including Proposed Action

2.1 Introduction

The Proposed Action has been submitted by CCI to allow for development of oil and natural gas resources in the area, while minimizing environmental effects to surface resources. The Proposed Action consists of drilling an oil and natural gas well from a reclaimed well pad, upgrading an existing access road, and the installation of a gathering pipeline. Archaeological, paleontological, biological, and surface hydrological resources were considered to best locate the pipeline route. The proposed project location was selected in such a manner as to have the least effect on area resources, while also allowing for efficient and economical development of the mineral resources.

The BLM reviewed the following information when adjusting the location of the Proposed Action elements to identify and minimize the environmental effects.

- The Proposed Action would utilize a preexisting access road and well pad constructed for the now plugged and abandoned Big Mac 6-12 well.
- Class III Cultural resource inventory report January 2013—90 acres surveyed including alternate pipeline routes and in May 2013, an additional 19 acres was surveyed for a proposed alternate pipeline route.
- Paleontological surveys – October 2012 and July 2013.
- Wildlife surveys – nesting raptors completed June 2013.
- Special Status plant species and vegetation survey – June 2013.
- Visual Simulation of the pipeline and staging areas from County Road 4R – December 2013.

The alternatives considered in detail are described below, followed by alternatives considered but eliminated from further analysis. The environmental effects described in Chapter 4 are based upon the detailed description of the project alternatives. The Proposed Action incorporates the Design Features described by the applicant in the APD and ROW Application packages. In addition, CCI would abide by the Conditions of Approval (COAs) specified by the BLM for the road, well pad, and pipeline route (COAs can be found in Appendix A).

2.2 Alternative A – No Action

The No Action alternative is a denial of the APD and ROW Application described in Alternative B: Proposed Action. By deciding upon the No Action alternative, the proposed construction and operation of the well would not occur on federal lands. The BLM can deny an APD and ROW Application if the proposal would violate lease stipulations, applicable laws and/or regulations, or to prevent undue or unnecessary environmental degradation. The denial does not deny the

right to drill and develop a leasehold and CCI could submit an APD proposing an alternative location or methods to develop this lease in the future.

2.3 Alternative B – Proposed Action

CCI has filed an APD, and ROW Application with the BLM to drill and develop federally owned minerals held by lease in San Miguel County, Colorado. The primary formation being targeted is the Leadville Formation. A summary of the proposed construction activities is provided in Section 2.3.2.

2.3.1 Location and Access

The proposed well pad and upgraded well pad access road are located approximately 19 miles northwest of Dove Creek, Colorado in Section 6, Township 43 North, Range 19 West. The proposed pipeline would run from the well pad north to Section 31, 30, and 19 in Township 44 North, Range 19 West (Figure 2). Approximately 1.25 miles of access road would require improvements to access the well pad. Other existing county and BLM roads would be used for construction access to the site, and would only require routine maintenance. The entire Proposed Action is on public lands managed by the BLM.

The proposed well site would be accessed in San Miguel County by exiting Highway 491 in Utah, and heading onto West Summit Road in a northerly direction for 9.5 miles, then turning onto County Road 329 in an easterly direction for 2 miles. County Road 329 intersects County Road 370 where travel would continue south for 0.2 mile and then in an easterly direction on County Road 360 for 2.2 miles. County Road 360 intersects with County Road 1M, where travel would continue in a northerly direction for 2.5 miles and then turn in an easterly direction onto County Road Q1 for 2.4 miles. The well pad access road departs from County Road Q1 and follows the original access road for the Big Mac 6-12 well, as shown in Figure 2.

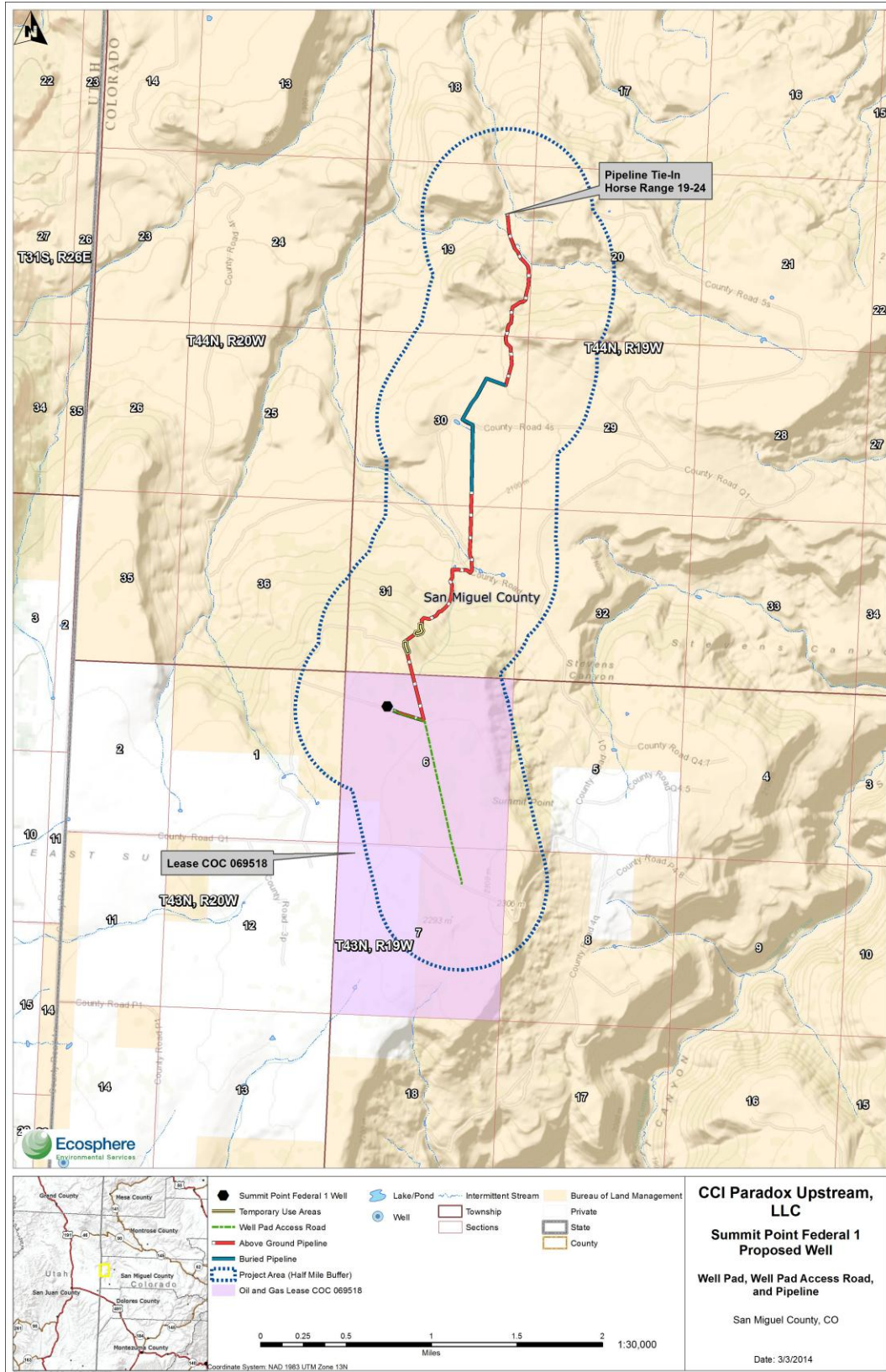


Figure 2. Proposed Well Pad, Pipeline, Temporary Use Areas, and Well Pad Access Road

2.3.2 Construction

The Proposed Action includes construction and drilling of one oil and natural gas well. This well would require construction of a well pad, upgrading an existing access road, and installation of a gathering pipeline. All construction operations would conform to standards indicated in the BLM and U.S. Forest Service *Surface Operating Standards for Oil and Gas Exploration and Development* (The Gold Book) (USDI/USDA 2007).

2.3.2.1 Well Pad

The initial disturbed area associated with the well pad would occupy approximately 4 acres, the majority of which would be on a reclaimed pad belonging to the plugged and abandoned Big Mac 6-12 well. The well pad would be roughly rectangular, about 300 feet by 370 feet in size, with an additional area for segregated spoil piles (topsoil and subsoil) and for cuts and fills (Figure 3). If the well is productive, 2.6 acres would be reclaimed, leaving about 1.4 acres for the production pad.

The well pad is designed to maximize the area that would be reclaimed during interim reclamation operations and minimize the amount of surface needed to ensure safe long-term operations. All drilling operations would use a closed-loop mud and fluid system; therefore, a reserve pit would not be necessary for the drilling of the proposed well.

The well pad location would be constructed from the present native soil/rock material. The pad would be cleared of vegetation, leveled by standard cut and fill techniques, and graded to provide a work area for the drilling activities. Stripped vegetation, topsoil, and excess material would be separated and stockpiled along the southern and western edges of disturbance. These materials would be reserved for use during interim and final reclamation. The stored topsoil would not be deeper than 3 feet and would be covered with a breathable organic layer, such as “tackifier” or mulch, to help prevent erosion prior to its use in the reclamation procedures. Erosion control measures such as water bars, lateral furrows, weed free straw bales, silt fences or other appropriate measures would be installed on cut and fill slopes to protect against erosion.

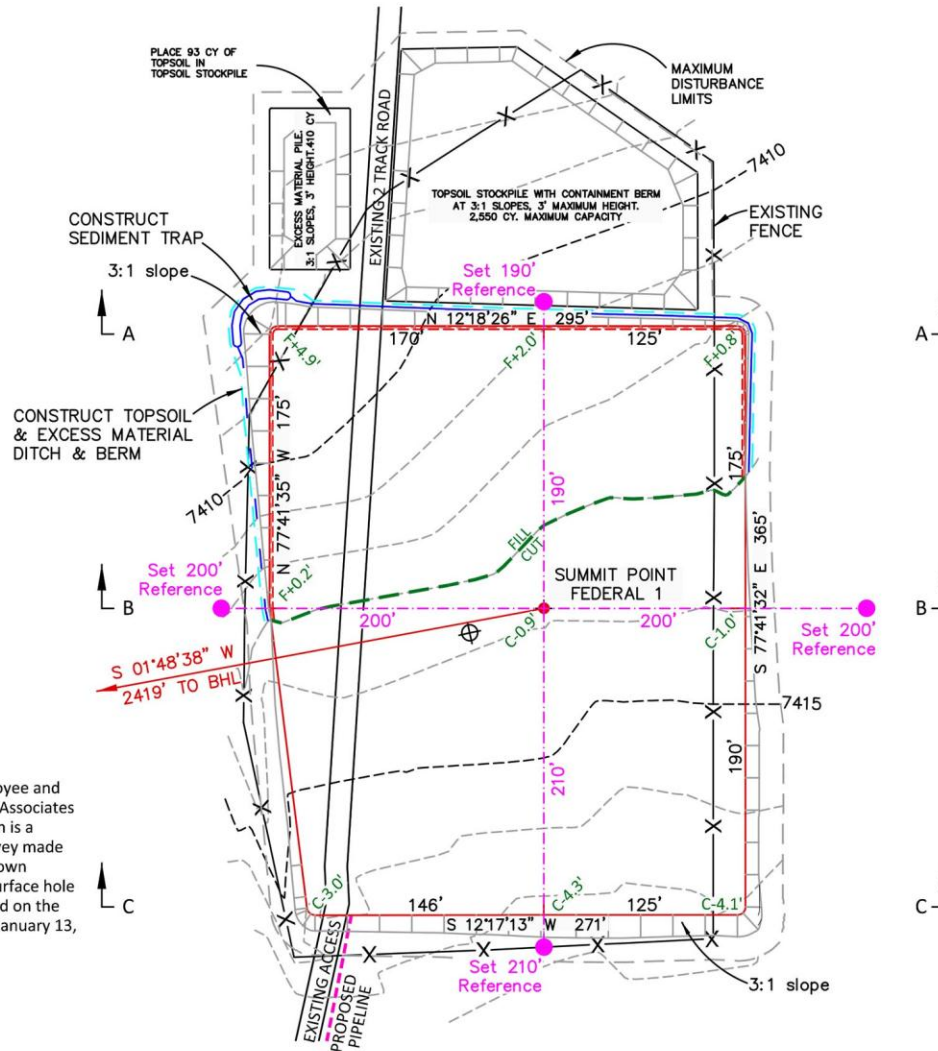
As previously stated, the total initial surface disturbance from construction of the well pad would be approximately 4 acres. Following completion operations, portions of the well pad totaling 2.6 acres not needed for production would be reclaimed (Figure 4). Generally, during interim reclamation activities, cuts and fills would be re-contoured to blend with adjacent natural slopes and would be revegetated. Assuming interim reclamation success, long-term surface disturbance at the well pad would be reduced to approximately 1.4 acres (see Sections 2.3.8 for more details).

UNGRADED ELEVATION: 7413.9'
 PROPOSED FINAL GRADE: 7413.0'
 PROPOSED AREA OF DISTURBANCE:
 MAXIMUM = 4.0± ACRES TOTAL
 (3.2 ACRES IN PREVIOUSLY RECLAIMED LANDS)
 (0.2 ACRES IN PREVIOUSLY DISTURBED LANDS)
 (0.6 ACRES IN UNDISTURBED LANDS)

DRAINS TOWARDS:
 MCINTYRE CANYON DRAINAGE



SCALE: 1"=100'



SURVEYOR'S STATEMENT

I, Ronald C. Rennke, an employee and agent for William H. Smith & Associates P.C., Inc. state the plat herein is a representation of a field survey made under my authority of the shown SUMMIT POINT FEDERAL 1 surface hole location and pad, being staked on the ground as shown herein on January 13, 2012.



Ronald C. Rennke
 COLORADO PLS 37065

CONFIDENTIALITY NOTES:

The information contained in this plat is legally privileged and confidential information intended only for the use of the recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

**SUMMIT POINT
 FEDERAL 1 PAD**



WILLIAM H. SMITH & ASSOCIATES P.C.
 SURVEYING CONSULTANTS
 550 EAST SECOND NORTH PHONE: 307-875-3638
 GREEN RIVER, WY 307-875-3639
 www.whsmithpc.com

JOB NO: 2011900.004
 REVISIONS: Modify CUT/FILL line.
 6/05/13 RCR

DATE DRAWN - BY: 12/23/11 - rcr
 SCALE: 1" = 100'
 EXHIBIT 3

PAGE 1 OF 4

CONSTRUCTION LAYOUT DRAWING

SUMMIT POINT FEDERAL 1

NE4NW4 SECTION 6, T.43N., R.19W., N.M.P.M. SAN MIGUEL COUNTY, COLORADO

ITEM	CUT	FILL	TOPSOIL	EXCESS
PAD	4,904 CY	2,525 CY	2,134 CY	245 CY
PIT	NONE			
TOTAL	4,904 CY	2,525 CY	2,134 CY	245 CY

Figure 3. Well Pad Plat (Dimensions are Approximate)

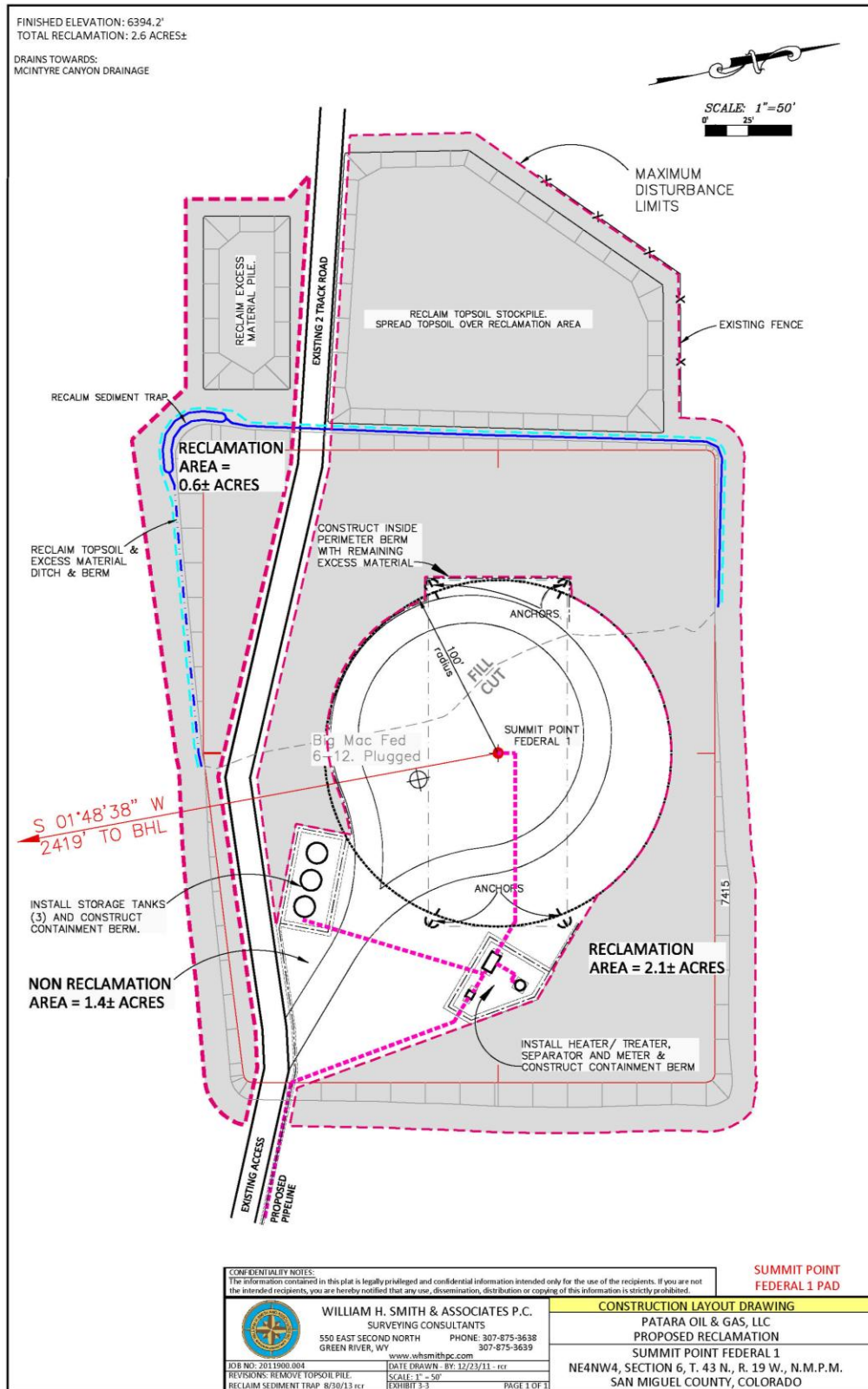


Figure 4. Well Pad Reclamation Areas During Production (Dimensions are Approximate)

2.3.2.2 Well Pad Access Road and Access Routes

The existing well pad access road would be utilized during well pad construction as well as drilling, completion, operation, and maintenance of the well. The well pad access road extends east and south from the well pad for 6,613 feet (1.25 miles) to connect with County Road Q1. This well pad access road would require improvements that would occur in a 35-foot ROW. The existing access road would be widened to a 16-foot travel surface to accommodate drilling traffic. Borrow ditches and road drainage structures would be installed. Total area of the well pad access road ROW is 5.31 acres; of which, 3.64 acres are in existing disturbance (i.e., existing road). The entirety of the access road is on BLM land and within CCI's lease COC 069518 (Figure 2). The access road would be maintained to accommodate year-round traffic and prevent soil erosion.

Construction access would use existing County and BLM roads, including County Road Q1, County Road 4R, and an unnamed BLM road to the existing Horse Range 19-24 well pad. CCI would conduct routine maintenance to these roads, but they would not require upgrades.

2.3.2.3 Gathering Pipeline

If the well is unproductive, the well bore would be plugged and abandoned, and the well pad and access road would be reclaimed per BLM requirements. If the well is productive, a natural gas gathering pipeline would be installed cross country in a northerly direction to tie into an existing pipeline at the Horse Range 19-24 well pad (Figure 2). The pipeline would be pressure tested with nitrogen to locate any leaks for 100 percent Maximum Allowable Working Pressure. The pipeline would be constructed to applicable American Petroleum Institute industry standards. Approximately 17,677 feet (3.3 miles) of the pipeline corridor would be outside of CCI's lease in Sections 19, 30, and 31, Township 44N, Range 19W (Figure 2). CCI has submitted a ROW Application to acquire a BLM off-lease ROW for this section of pipeline.

The proposed pipeline, as shown in Figure 2, would be a steel gathering line 20,177 feet (3.8 miles) in length and a maximum 6-inch diameter. The pipeline ROW will be 35 feet on above-ground segments and 50 feet on buried segments. With prior BLM approval, to allow for difficult construction areas such as sharp turns and steep slopes, the pipeline ROW could be widened by as much as 25 feet for no more than 2,017 feet (10 percent of the length of the pipeline). The total disturbance for the pipeline would be 18.9 acres. Two temporary use areas (TUAs) for staging and turnaround would be placed along the pipeline route; the northern TUA would be 0.8 acre and the southern TUA would be 0.6 acre (Figure 2). The TUAs would be bladed or mowed to minimize fire risk and would later be reclaimed and fenced or signage would be installed to prevent recreational use. The pipeline would parallel existing road disturbance for 96 percent of the pipeline corridor. Total temporary disturbance for the pipeline and TUAs would be 20.9 acres.

Table 3. Pipeline Details and Disturbance Estimate

Pipeline Segment	Length (feet)	Estimated Disturbance (acres)
From wellhead along existing road (35-foot ROW width)	3,324	2.67
New Disturbance (35-foot ROW width)	355	0.29
Along existing road (35-foot ROW width)	6,126	4.92
Buried along existing road (50-foot ROW width)	4,531	5.20
Along existing road (35-foot ROW width)	3,013	2.42
Proposed new disturbance (35-foot ROW width)	547	0.44
Along existing road to tie-in at existing pipeline (35-foot ROW width).	2,281	1.83
Additional 25-foot width over no more than 10% of pipeline length		1.16
TOTAL PIPELINE	20,177	18.93
TUA – Northern	75 ft. x 450 ft.	0.8
TUA – Southern	75 ft. x 350 ft.	0.6
TOTAL TUAs		1.4
TOTAL PIPELINE & TUAs		20.33

Approximately 4,531 feet (0.86 mile) of the pipeline would be buried within a 50-foot-wide corridor. The remaining 15,646 feet (2.96 miles) of the pipeline would be surface installed within a 35-foot-wide corridor. The surface-installed pipeline would be suspended over draws and drainages so water and debris could pass under the pipe. The pipeline would be buried under all road crossings. The pipeline would be pulled over the steep area between the two TUAs and through forested areas as much as possible to reduce the number of trees removed and reduce damage to trees. Surface installation of the pipeline would not require blading or excavation. However, incidental disturbance from surface and buried pipeline installation would be reclaimed consistent with the surface restoration discussed in Section 2.3.8.

Generally, a mile of pipeline would be constructed in approximately 4 days. Between 10 and 25 construction and supply-related personnel would be needed to install new sections of the proposed pipeline ROW.

2.3.3 Well Development

2.3.3.1 Drilling and Completion

A Tier II mechanically powered mobile drilling rig would be transported to the well site by tractor-trailer trucks. The well would be directionally drilled with water-based fluids. CCI would employ a closed-loop drilling system, enabling the cuttings to be removed from the drilling fluid and transferred to a steel hopper on the pad as the drilling fluid is recycled. No abnormal pressures, temperatures, hydrogen sulfide gas, or other hazards are anticipated.

Casing would be set and cemented back to the surface to isolate and protect near-surface aquifers and to attach pressure control equipment. Pressure control equipment and surface casing would be regularly tested for pressure integrity to meet the minimum requirements of Onshore Oil and Gas Order No. 2, and the BLM would be notified in advance of all pressure tests. The blowout preventer would be mechanically checked daily during drilling operations.

Prior to setting the production casing, well logs may be run to evaluate the potential of the well. If the evaluation concludes that sufficient hydrocarbons are present and recoverable, the steel production casing would be run and cemented in place. Cementing the production casing would prevent damage to the wellbore from the targeted formation pressure, retard corrosion, and prohibit pressure communication or fluid migration between productive zones. After drilling operations are completed, the drilling rig would be dismantled and demobilized from the location.

2.3.3.2 Completion Operations

If the drilled well indicates economic productivity, a completion rig would be moved to the well site for completion operations, which would commence approximately 1 week after drilling is completed. Well completion would consist of perforating the production casing, stimulation of the formations, flowback of completion fluids, flow testing to determine productivity, and installation of production equipment to facilitate hydrocarbon sales.

The production casing would be perforated across the productive zones to allow the flow of hydrocarbons to the surface. Prior to stimulation, the integrity of the cement in the wellbore would be confirmed by evaluating the results of a cement bond log. The stimulation fluid consists of a fluid or foam slurry augmented with gels and other chemical additives that would be pumped down a well bore through the perforations to induce greater permeability in the target formation. Proppants (solid material added to fracking fluid designed to keep an induced hydraulic fracture open) such as sand would provide the bridging and increased permeability necessary to enhance production. The COGCC requires operators to disclose the types and amounts of chemicals used prior to stimulation (COGCC Rules and Regulations, §205A).

Post-stimulation flow tests would evaluate the well's productivity. The duration of flow testing would vary according to individual well performance, but it typically would be conducted only long enough for the recovery of fluids. Produced fluids (including any oil/condensate) would be

delivered to test tanks on the well pad. Oil/condensate would be skimmed from the surface and transferred to production tanks. During completion operations, it may be necessary to flare gas temporarily from a stack prior to installing production equipment.

2.3.3.3 Production Operations

All equipment and materials not necessary for production operations would be removed from the well pad. Well production facilities, including a gas gathering line, would be installed after drilling operations are finished. All-weather gravel surfacing would be distributed where vehicles may drive and, if necessary, the area of the well pad on which the production equipment would be installed. Gravel would be obtained from suppliers near Redvale, Colorado or La Sal, Utah.

Production equipment would be installed on the well pad to allow for maximum interim reclamation. Facilities on the well pad may include a wellhead, valves and piping, separator, heater-treater, production tanks, telemetry equipment, dehydrator, and a gas meter. Open stacks would be screened to prevent entry by birds. If tests determine oil can be produced, a pump-jack with a natural gas, propane or diesel-fired maximum 100-horsepower engine would be installed.

Three to five 400-barrel tanks would be placed on the well pad for storing oil/condensate and produced water. The exact number of tanks would be determined by production volumes. The tanks would be approximately 12 feet in diameter and 20 feet high, with stairs and a walkway. A secondary containment berm would be constructed to surround production vessels, including production fluid storage tanks and the separator. The berm would be able to contain 110 percent of the storage capacity of the largest tank in the battery. The integrity of the berm would be continually maintained to ensure that lateral movement of fluids past the containment would be prevented. Secondary containment trays would be installed for all chemical containers. Trays would be equipped with protection to prevent animals from gaining access to the contents. The trays would promptly be emptied of any spills or precipitation that may accumulate.

All aboveground structures remaining on-site longer than 6 months would be painted Shale Green to match the surrounding landscape color. Surface facility painting would exclude the aboveground pipeline as well as those facilities and equipment required to comply with Occupational Safety and Health Act (OSHA) regulations.

All production measurement facilities would conform to American Petroleum Institute or American Gas Association standards for liquid hydrocarbon and gas measurement. CCI would adhere to all site security guidelines and regulation identified in 43 C.F.R. 3126.7.

2.3.4 Water Requirements

It is estimated that up to 5,200 barrels (0.5 acre-foot) of water would be needed to drill and complete the proposed well and control fugitive dust during dry and windy conditions.

Water for drilling and completing the well would come from a private, off-lease source with existing permits. The water would be transported to the location by tanker truck.

2.3.5 Solid Waste Management, Hazardous Materials, and Safety

Cuttings would be temporarily stored on-site in a 14-yard steel hopper within a gravel-covered, lined earthen berm. When drilling operations are completed, the cuttings would be transported by truck to an approved disposal facility. All on-site and auxiliary tankage would include a synthetic-lined, earthen secondary containment berm. Disposal of produced fluids other than water would be stored in frac tanks on the well pad. Disposal of produced water would be done in accordance with Onshore Order No.7 at an approved construction waste disposal facility.

All trash would be stored in a trash cage and hauled to an appropriate landfill during and after drilling and completion operations. Sewage would be contained in a portable chemical toilet and sewage holding tanks in trailers during drilling and completion operations, and would be disposed at a permitted disposal facility.

A variety of chemicals including lubricants, paints, and additives would be used to drill and complete the well. These materials would be temporarily kept in limited quantities on the well pad. A variety of chemicals including lubricants, paints, and additives would be used to drill and complete the well. These materials would be temporarily kept in limited quantities on the well pad. Some of these chemicals contain hazardous materials that include some greases or lubricants, solvents, acids, and paint. Chemicals that would be used during production operations include foams, scale inhibitors, and corrosion inhibitors. These chemicals would be stored in tanks within a secondary containment structure.

Material Safety Data Sheets (MSDS) would be maintained by CCI or its contractors for all materials used on the location and chemical containers would display MSDS labels. The transport, use, storage, and handling of hazardous materials would follow procedures specified by federal and state regulations. Transportation of the materials to the well location is regulated by the Department of Transportation (DOT) under 49 CFR, Parts 171–180. DOT regulations pertain to the packing, container handling, labeling, vehicle placarding, and other safety aspects pertaining to hazardous materials.

Chemicals meeting the criteria for being acutely hazardous materials/substances or meeting the quantities criteria per BLM Instruction Memorandum No. 93-344 would not be used. Chemicals subject to reporting under Title III of the Superfund Amendments and Reauthorization Act of 1986 in quantities of 10,000 pounds or more would not be used, produced, stored, transported, or disposed of annually during the drilling, completion, or operation of the well. In addition, no extremely hazardous substance (as defined in 40 CFR 355) in threshold planning quantities would be used, produced, stored, transported, or disposed of while producing the well.

Hazardous waste would not be generated in association with drilling the proposed well. Most wastes that would result from drilling and operating the proposed well are excluded from regulation by the Resource Conservation and Recovery Act under the exploration and production exemption in Subtitle C [40 CFR 261.4(b)(5)] and are considered solid wastes. Such wastes include those generated at the wellhead and through the production stream. Exempt wastes

include produced water, production fluids such as drilling mud or well stimulation flowback fluids, and soils potentially affected by spills of these fluids.

CCI would develop and maintain a Spill Prevention Control and Countermeasure (SPCC) plan. Accidental spills of oil, produced water, or other produced fluids would be cleaned up and disposed of in accordance with appropriate regulations and the SPCC plan. An accidental leak or spill in excess of the reportable quantity established by 40 CFR 117.3 would be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, §102 B.

2.3.6 Personnel Requirements and Schedule

Personnel performing construction, drilling, and completion operations would commute from the surrounding area daily. During drilling and completion operations, approximately up to five trailers or motor homes would remain on location for use for the drilling crew supervisor, mudlogger, other necessary personnel, and equipment storage.

Upgrading the existing access road and constructing the well pad would require approximately 3 to 4 weeks. Two to six individuals would comprise the construction crew and access the location daily, using an average of three light trucks. Bulldozers, motor graders, and other heavy equipment would be used as necessary to perform the earth-moving operations and construct the culverts during construction.

Drilling operations would require approximately 30 days, 24 hours a day, 7 days per week. Approximately 40 truckloads of equipment would be required to transport the drilling rig and associated equipment to the location for assembly.

Completion and testing operations would occur during daylight hours and would require approximately 15 days. During completion operations, approximately 15 large trucks would access the location. Trucks would also be needed to deliver water to the location and remove fluids to an approved disposal facility.

2.3.7 Maintenance

All vehicle traffic, personnel movement, construction/restoration operations would be confined to approved areas. The producing well would typically be visited daily by a pumper, but possibly less frequently, depending upon well performance. Visits would be reduced to the extent practical utilizing remote monitoring of the well. The access road and well pad would be kept free of trash during production operations. Produced water would be hauled by truck to an approved disposal facility. Oil/condensate would be contained in tanks on the well pads and transported by truck to the point of sale.

CCI would maintain the access road to BLM resource road standards, providing a reasonably smooth surface free of rocks and ruts no greater than 4 inches deep for 10 feet or longer. Vehicle travel would be restricted to the access roads and well pads. Dust control measures, such as applying magnesium chloride, would be performed when necessary during dry conditions. CCI

would instruct its employees and contractors not to exceed 20 miles per hour on the access road to discourage the generation of fugitive dust.

CCI would control noxious weeds and invasive plants by utilizing a state-certified licensed pesticide applicator. All weeds would be treated annually or as needed to maintain control, as described in CCI's Pesticide Use Plan.

Snow removal and drainage ditch maintenance would be performed on an as-needed basis. Snow may be stored on the well pad and/or at the spatial extent of approved disturbance boundaries to facilitate its removal during the remainder of the winter.

2.3.7.1 Workover Operations

A workover operation on the well may be periodically required to sustain production. A workover operation would use a small rig to perform a variety of maintenance procedures including repairs to the wellbore equipment (casing, tubing, etc.), the wellhead, or the producing formation. These repairs generally occur only during daylight hours and typically require 3 to 5 days to complete. Workover frequency cannot be accurately projected since the type of workover depends on well-specific circumstances. No additional surface disturbance would result from workover operations.

2.3.8 Reclamation

All disturbed areas would be reclaimed according to instruction from the Authorized Officer (AO) and measures contained in the APD Surface Use Plans of Operation, which contains provisions and procedures for reclamation of disturbed areas. Reclaimed areas receiving incidental disturbance during production operations would be reseeded as soon as practical and at times of the year intended to facilitate regrowth of vegetation. However, earthwork for interim and/or final reclamation would be completed within 6 months of well completion or abandonment, weather permitting. CCI would modify its reclamation procedures as necessary to achieve the reclamation outcomes mutually agreed-upon with the AO. CCI would submit all required documentation to notify the AO of reclamation actions and extent of reclamation progress or completion.

The goal of surface reclamation is to achieve (to the extent possible) final reclamation standards, including the development of a self-sustaining, vigorous native and/or desirable vegetation community with a density sufficient to provide a stable soil surface and inhibit the growth of noxious and/or invasive species. Reclamation operations would be performed to return the disturbed area to productive use and meet the resource objectives of the land.

Reclamation would be conducted in two phases—interim and final. Interim reclamation would be performed following well completion and extend through the production period. Interim reclamation would be performed on disturbed areas not required for production operations. Final reclamation would be performed following well abandonment. Reclamation operations in both phases may include (but are not limited to) re-contouring the surface to approximate the features

of the natural topography, restoring drainage systems, distributing topsoil and/or excess material, seeding with desired vegetation, and weed control.

Re-contouring would be performed to approximate the natural contours of the land or blend with the surrounding topography, but left with a slight crown to compensate for settling and reduce water infiltration. Stormwater management, the ability to facilitate revegetation, and visual resources would be considered in re-contouring the site. Slopes would be reduced to 3:1 or less. Summit Point Federal 1 would be added to the current Stormwater Management Plan (SWMP) for Andy's Mesa, Hamilton Creek, and Fossil Federal Fields.

Prior to spreading topsoil, the surface would be prepared by ripping the rough grade to a depth of 18 to 24 inches on 12- to 24-inch spacing. The last pass would be ripped on the contour to promote water infiltration and reduce the opportunity for erosion. No depressions would be left that would cause water to pool or pond. All salvaged topsoil would be spread and seeded, including cut/fill slopes and borrow ditches. Final surface preparation would depend on the condition of the soil surface and include scarifying a crusted soil surface or roller packing an excessively loose soil surface.

Reclaimed areas would be reseeded using seed mixes and methods intended to maximize germination. Seeding would be completed, as described in the SUPO, by drilling or by broadcasting at twice the specified application rate or as directed by the AO.

Seeding would occur no more than 24 hours after final seedbed preparation. The seed mixture would be certified weed-free, with a minimum germination rate of 80 percent and minimum purity of 90 percent. Seeds may be drilled or broadcast. Seed drills would be operated on the contour. If the seed mixture is broadcast, the seeding rate would be doubled and the seeds covered with some type of drag. Seeds would be planted to the appropriate depth for the species, generally 0.25 to 0.50 inch deep. The following seed mixture was proposed for reclamation operations:

Table 4. Proposed Seed Mix

Seed Mixture Species	Variety	Pounds Pure Live Seed per Acre
Indian Ricegrass	VNS	1.6
Galleta Grass	Viva, florets	2.6
Sand Dropseed	VNS	0.1
Needle and Thread	VNS	5.7
Bottle Brush Squirreltail	Tusas	1.4
Alkali Sacaton	VNS	0.2
Blue Grama	Alma	0.6
TOTAL		12.2

If noxious weeds become established within reclaimed areas, CCI would treat and control weeds with an approved herbicide. All control activities would be coordinated with the BLM prior to treatment.

2.3.8.1 Interim Reclamation

Interim reclamation would be performed on all areas of the well pad not needed for production operations and along the pipeline route. If the well were put into production, CCI would perform interim reclamation to just outside of the anchors. The portions of the well pad not needed for production operations would be re-contoured and erosion control measures installed. Mulching, erosion control measures and fertilization may be required to achieve acceptable stabilization. The excess materials pile would be used to restore the portion of the well pad not needed for production operations.

The rough grade would be ripped, topsoil would be spread, and the seedbed prepared, as previously described. After reseeding, trees cleared during site preparation and large rocks excavated during construction would be scattered across the interim reclamation area. Cleared vegetation and vegetative debris spread on the surface during interim reclamation would provide cover and serve as a deterrent to surface water flow.

2.3.8.2 Final Reclamation

Final reclamation would consist of reclaiming all areas used for production purposes. The depleted wellbore would be plugged and abandoned, and marked with the location, lease number, and operator name. All surface facilities would be removed, including the surface pipeline. Gravel or other surfacing materials would be removed from the well pad.

The remaining disturbed surface would be re-contoured, the rough grade ripped, topsoil spread, and the seedbed prepared, as previously described. On the well pad, CCI would push fill material into the cuts and up over the back slope to blend with the natural topography. No depressions would be left that might retain water.

2.3.8.3 Reclamation Monitoring and Assessment

CCI would monitor interim and final reclamation efforts and document the results in a reclamation monitoring report to be submitted to the AO annually. The report would:

- Document if reclamation objectives have been met or if objectives are likely to be met within a reasonable time
- Identify additional actions that may be required to meet reclamation objectives within a reasonable time
- Document the acreage for initial disturbance, successful interim reclamation, and successful final reclamation

Successful reclamation would be measured by the establishment of desired vegetation, prevention of erosion, and minimal weed establishment. Interim and final reclamation would be considered successful if all of the following criteria are met:

- Seventy percent vegetative cover (basal for grasses; canopy for shrubs) of a nearby area with a comparable vegetation type
- Ninety percent of the vegetative cover consists of species included in the seed mix or native species of the area
- Erosion control where water naturally infiltrates into the soil, and gullying, headcutting, slumping, and deep or excessive drilling is not observed (USDI/USDA 2007)

2.3.9 Surface Disturbance Summary

Initial disturbance would be the amount of land needed for construction, drilling, and completion operations. Initial disturbance would last from 1 to 5 years and is considered short term. Operational disturbance would consist of lands needed for production operations, lasting greater than 5 years, and is considered long term. Installation of the aboveground pipeline would occur on an ungraded surface where vegetation (including trees) would be retained to the maximum extent possible. Damage to trees from laying the pipeline or tree and shrub removal is more likely where trees are dense, such as from the well pad to the southern TUA. Flatter terrain with sparser trees would result in a minimal loss of vegetation. Where the pipeline would be buried, a 50-foot-wide ROW would be cleared of vegetation and then reclaimed according to BLM interim reclamation standards. The two TUAs would be cleared of vegetation, mostly piñon pine and juniper trees, and would be reclaimed with native grasses. Therefore, the TUAs would be converted from woodlands to grasses upon reclamation. Approximately 2.6 acres of the well pad would be reclaimed. This would leave 1.4 acres of residual pad disturbance, which is the amount of bare ground remaining on a well pad, to conduct production operations safely for the productive life of the well (see Table 5).

Table 5. Surface Disturbance Summary

Type of Disturbance	Initial Surface Disturbance (acres)	Interim Reclamation (acres)	Operational Surface Disturbance (acres)¹
Well Pad ²	4.0	2.6	1.4
Pipeline	18.93	18.93	0
TUAs	1.4	1.4	0
Well Pad Access Road Upgrade	5.31	1.67	3.64 ³
TOTAL	29.64	24.6	5.04

¹ Operational disturbance calculations are based on the assumption that interim reclamation would be initiated and successful. Interim reclamation for the pipeline and TUAs would consist of a long-term shift to grasses, forbs, and shrubs from piñon-juniper woodlands.

² Operational disturbance assumes that approximately 2.6 acres of the initial 4 acres of well pad disturbance could be reclaimed following construction, leaving a 1.4-acre well pad.

³ This acreage reflects the access road improvements (widening) of the 6,613-foot x 24-foot ROW, and is mostly existing disturbance.

2.3.9.1 Applicant-Committed Project Design Features

CCI would perform all operations consistent with the details of this project description and the contents of the APD. Applicant-committed Design Features are listed in Table 6.

Table 6. Applicant-Committed Design Features

Applicant-Committed Design Features
General
1. CCI will monitor its facilities to ensure that normal operations will be in compliance with the Onshore Orders, its Surface Use Plan of Operation contained in the APD, other rules and regulations that apply to the Proposed Action, commitments proposed by CCI (as contained in this EA), and any conditions that may result from approval of the Proposed Action.
2. CCI will secure all required permits and approvals from the BLM, State of Colorado, and San Miguel County prior to construction. CCI will adhere to all applicable federal, state, and county regulations while performing all operations associated with the Proposed Action.
3. CCI will conduct construction and production activities consistent with its storm-water management plan (SWMP) for Andy's Mesa, Hamilton Creek, and Fossil Federal Fields to prevent erosion and sedimentation to the extent possible.
4. Vehicle operators would obey posted speed restrictions and observe safe speeds commensurate with road and weather conditions.
5. CCI will utilize best management practices for control of nonpoint sources of water pollution to prevent erosion, allow year-round traffic, and ensure safe conditions in its general operating procedures.
6. CCI's drug and alcohol policies will be rigorously enforced.
Construction and Drilling
7. A closed-loop drilling system will be implemented for the drilling of this well.
8. Construction operations will be conducted in consideration of the Surface Operating Standards for Oil and Gas Exploration and Development, 4th Edition (Gold Book) (USDI/USDA 2007).

Applicant-Committed Design Features	
9.	CCI will obtain ROWs for the pipeline prior to any construction operations.
10.	CCI would use a Tier II drilling rig or better to decrease NO _x emissions.
11.	As needed, during drilling and completion operations, CCI will perform dust abatement measures to the access road and/or well pad. Dust control measures will also be performed (as needed) on the access road during production operations.
12.	Prior to initiating construction operations, all heavy equipment will be pressure washed at an offsite location to reduce the possibility of transporting seeds of noxious weeds to the project area.
13.	CCI will equip engines for the pump jack on the well pad with a muffler capable of noise reduction to less than 70 decibels at a 500-foot radius.
14.	CCI will conduct biological surveys (as needed) at the direction of the AO.
15.	Construction of the well pad, access road, and pipeline corridor will not occur from February 1 to August 15 for protection of nesting raptors. This timing can be decreased for project elements that have no nesting raptors within ½ mile, as verified by a raptor survey completed the year of construction and after May 1.
16.	If cultural materials are found during construction (including subsurface cultural resources), CCI will halt surface disturbing activities, notify the AO immediately, and conduct future operations according to direction from the AO. CCI would require that their personnel, contractors, and subcontractors comply with federal regulations intended to protect archeological and cultural resources.
17.	If paleontological resources are encountered during activities, CCI will immediately cease all operations and contact the BLM AO immediately.
18.	CCI will adhere to BLM's Hydraulic Considerations for Pipelines Crossing Stream Channels, BLM Technical Note 423, April 2007.
19.	Pipeline will be pulled over a steep hill between the two TUAs (Section 31, T44N, R19W) and as much as possible through forested areas to reduce vegetation removal and erosion potential.
20.	Visual screening will be preserved or installed where the pipeline crosses existing roads to minimize effects to visual resources. Trees cleared during site preparation and large rocks excavated during construction will be scattered across the interim reclamation area.
21.	CCI would provide escorts to accompany public land users through the project area during drilling and completion operations.
22.	CCI would post signs along roads potentially affected by pipeline installation if construction occurs during the hunting season to notify public land users when delays are expected.
Production and Maintenance Operations	
23.	CCI will maintain existing roads and well pads in consideration of Gold Book standards and/or as described in COAs and as directed by the AO.
24.	Open stacks or open tanks will be screened to prevent entry by birds, bats, or other wildlife.
25.	If CCI discovers any dead or injured federally protected species during construction or operation, it will notify the BLM AO within 24 hours.
26.	CCI will control noxious and invasive weed species in the project area. All weeds would be treated as needed to maintain control and prevent their spread.
27.	CCI will paint all permanent aboveground structures within 6 months of installation with a flat, non-reflective Shale Green to match the surrounding landscape color, as determined by the AO.
28.	CCI will develop and implement a Spill Prevention, Control, and Countermeasure Plan for the location.
29.	CCI will construct a secondary containment system that can contain 110 percent of the storage capacity of the largest tank on the well pad.
30.	Pipeline construction, inspection and maintenance will not occur if equipment makes ruts 4 inches deep, for 10 feet or longer.

Applicant-Committed Design Features	
Reclamation	
31.	Construction earthwork activities associated with interim and final reclamation, including salvaging and spreading topsoil, will not be performed when topsoil is frozen or when soils are saturated.
32.	CCI will monitor interim and final reclamation efforts and document the results in a reclamation monitoring report to be submitted annually to the AO.
33.	Seeding would occur no more than 24 hours after final seedbed preparation. Seed would be certified weed free, with a minimum germination rate of 80 percent and minimum purity of 90 percent.
34.	If noxious weeds become established within reclaimed areas, CCI would treat and control weeds with an approved herbicide.

2.4 Alternatives Considered, but Eliminated from Further Analysis

During the design of the Proposed Action, several pipeline alternatives were considered by the applicant and the BLM. The alternatives included:

1. Burying parts or the entire pipeline down the centerline of the roads.
2. In Section 19, at a steep hill before the tie-in, the pipeline would leave the road and travel cross country for 1,707 feet through mature piñon-juniper woodlands or, combine road improvements in that portion of road with a buried pipeline.
3. In Section 30 and 19, the last third of the pipeline route would utilize the flatter two-track road to the west, as an aboveground route.

The alternative pipeline routes above were eliminated from further analysis because they would result in more surface disturbance and increased erosion potential (items 1 and 2) or a longer, less direct pipeline route to the tie-in and a more fragmented landscape (item 3).

3. Affected Environment

3.1 Introduction

This chapter presents the existing environment (i.e., the physical, biological, social, and economic values and resources) of the project area that has the potential for environmental consequences, as identified in the issue statements in Section 1.7.. This chapter provides the baseline for comparison of effects/consequences described in Chapter 4.

3.2 General Setting

As described earlier, the project area is considered the location of the Proposed Action components and a ½-mile buffer. The project area is in western San Miguel County in an area of canyons, plateaus, and piñon-juniper woodlands. This location takes in part of the Paradox Basin, which is a feature of the Colorado Plateau and includes several anticlines and salt domes. Elevations range from 6,600 feet to 7,400 feet above mean sea level and the climate is semi-arid. Precipitation averages 13 to 15 inches per year. Piñon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) cover much of the mesa tops and slopes, while sagebrush (*Artemisia tridentata*) shrublands interspersed with native grasses occupy the lower valley bottoms. Much of the woodland on the lower slopes is considered to be mature old growth. A large grassy flat area on Horse Range Mesa would be crossed by both above-ground and buried pipeline portions, where the majority of the sagebrush is dead from past BLM-treatment. The area is called the Slick Rock Spike Treatment area and was aimed at range improvement.

The project area is fairly isolated, but does have a moderate network of graveled and two-track roads, some under the jurisdiction of the BLM and others maintained by San Miguel County. Private land exists in patches adjacent to the project area. Primary uses include livestock grazing, oil and gas exploration and production, and recreation. Historically, uranium and vanadium were extracted from the Salt Wash Member of the Morrison Formation, which underlies the various sandstone, siltstone, and mudstone layers that compose the surrounding region.

3.3 Resources/Issues Brought Forward for Analysis

3.3.1 Air Quality

Affected Environment: The CAA and the Federal Land Policy and Management Act of 1976 (FLPMA) require BLM and other federal agencies to ensure actions taken by the agency comply with federal, state, tribal, and local air quality standards and regulations. FLPMA further directs the Secretary of the Interior to take any action necessary to prevent unnecessary or undue degradation of the lands [Section 302 (b)], and to manage the public lands “in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values” [Section 102 (a)(8)].

The Clean Air Act (CAA), which was last amended in 1990, requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for criteria pollutants. Criteria pollutants are air contaminants that are commonly emitted from the majority of emissions sources and include carbon monoxide (CO), lead (Pb), sulfur dioxide (SO₂), particulate matter smaller than 10 & 2.5 microns (PM₁₀ & PM_{2.5}), ozone (O₃), and nitrogen dioxide (NO₂).

The CAA established 2 types of NAAQS:

Primary standards: – Primary standards set limits in order to protect public health, including the health of "sensitive" populations (such as asthmatics, children, and the elderly).

Secondary standards: – Secondary standards set limits in order to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.

The EPA regularly reviews the NAAQS (every five years) to ensure that the latest science on health effects, risk assessment, and observable data such as incidence rates are evaluated in order to re-propose any NAAQS to a lower limit if the data supports the finding. Ambient air quality standards must not be exceeded in areas where the general public has access. Table 7 lists the federal and state ambient air quality standards.

The EPA has delegated regulation of air quality to the State of Colorado (for approved State Implementation Plan (SIP) elements). The Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division (APCD) administers Colorado's air quality control programs, and is responsible for enforcing the state's air pollution laws.

Table 7. Ambient Air Quality Standards (EPA 2011)

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 µg/m ³	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution [71 FR 61144, Oct 17, 2006]	PM _{2.5}	primary and secondary	Annual	12 µg/m ³	Annual mean, averaged over 3 years
			24-hour	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary	Annual	0.03 ppm	Arithmetic Average
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

The proposed action area (North-western San Miguel County) encompasses a diverse region ranging from the rugged mountain resort communities of Telluride and Mountain Village to the arid ranching communities of the County's west end. Activities occurring within the area that affect air quality include exhaust emission from cars, agricultural equipment, and other non-road

or off road vehicles, as well as fugitive dust from roads, agriculture, and other energy development operations.

In general, air quality within an area is influenced by the amount and kind of pollutants that are released (within the area and up wind - dependent upon their chemical and physical properties), the area's topography or terrain (such as mountains and valleys), and weather (such as wind, temperature, air turbulence, air pressure, rainfall, and cloud cover). The APCD measures ambient air quality at a number of locations throughout the state. Similarly, several Federal Land Managers (FLMs) like the BLM, Forrest Service (FS), and National Park Service (NPS), also monitor air quality for NAAQS and Air Quality Related Values (AQRVs) to meet organic act requirements. Air quality within the region (as measured by nearby monitors, see Table 8 below) is considered good, and the area is currently in attainment for all NAAQS.

Table 8. Ambient Air Quality Monitoring Data Trends (CDPHE 2011 – 2013, EPA Forms)

Monitor	County	Pollutant (Standard)	2011	2012	2013
645 ¼ Pitkin Ave.	Mesa	CO (1 Hour - ppm)	1.8	2	1.5
		CO (8 Hour - ppm)	1.1	1.1	0.9
865 Rapid Creek Rd.	Mesa	O3 (8 Hour - ppm)	0.066	0.070	0.066
Mesa Verde NP	Montezuma	O3 (8 Hour - ppm)	0.070	0.068	0.069
333 W. Colorado Ave.	San Miguel	PM10 (24 Hour - µg/m3)	68	80	53
US Hwy 141 & D Rd.	Mesa	PM10 (24 Hour - µg/m3)	54	64	53
106 W. North St.	Montezuma	PM2.5 (Annual - µg/m3)	15	12	12
650 South Ave.	Mesa	PM2.5 (Annual - µg/m3)	22	24	35
106 W. North St.	Montezuma	PM2.5 (24 Hour - µg/m3)	6.1	5.6	5.2
650 South Ave.	Mesa	PM2.5 (24 Hour - µg/m3)	7.1	7.3	7.4

The proposed action development area is designated as a Class II Area, as defined by the Federal Prevention of Significant Deterioration (PSD) provision of the CAA. The Class II designation allows for moderate growth or degradation of air quality within certain limits above baseline air quality. The closest Class I area to the proposed well site location is the Canyonlands National Park, which lies approximately 60 miles to the west in Utah. Class I areas are afforded additional protection under the CAA, specifically for AQRVs such a visibility impairment and atmospheric deposition (acid rain and nutrient loading).

Mean temperatures in the area range from 11 degrees in January to 83 degrees in July. The area receives average annual precipitation of approximately 15.9 inches. Frequent winds in the area provide excellent dispersion characteristics for anthropogenic emissions.

3.3.2 Cultural Resources and Native American Religious Concerns

The proposed project would utilize a pre-existing well pad and access road. The surveys conducted for the original well pad were deemed by the BLM to be sufficient for all previously disturbed areas. Any additional disturbance deemed necessary while constructing the new pad will require monitoring by qualified archaeologists.

Archaeologists from Grand River Institute (GRI) conducted a cultural resource inventory of the Proposed Action under BLM permit C-52775. Prior to the field surveys, a records search was undertaken at the BLM and the Colorado Office of Archaeology and Historic Preservation in order to identify previously recorded sites within and in proximity to the proposed pipeline route. Results of this records review, along with results of the field inventory, are documented in a report on file with the BLM (GRI 2013a).

The pipeline route was surveyed at various times during October, November, and December 2012 to identify any sites occurring in previously un-surveyed areas. A 0.9 mile section of alternate pipeline route was surveyed on May 18, 2013. Methodology included walking two transects on either side of the flagged route and spaced at 15-meter intervals. Two previously recorded sites within the original proposed pipeline route were revisited and reevaluated. In addition, two other sites and eight isolated finds were newly recorded. Two of the sites were field evaluated as eligible for listing on the National Register of Historic Places (NRHP) (GRI 2013a). Four newly recorded cultural resources were observed within the alternate pipeline route. Three of the resources were prehistoric isolated finds and not eligible for inclusion on the NRHP. The final site is the Silvertone Mine, an early rim mine that is evaluated as eligible for inclusion on the NRHP (GRI 2013b).

No Native American religious concerns for the Proposed Action were expressed verbally or in writing during the analysis.

3.3.3 Recreation

Dispersed recreational activities within the project area include hunting, all-terrain vehicle (ATV) use, scenic driving, camping, and wildlife viewing. Access through the project area during hunting season is the primary use of the area. Otherwise, the area is not frequently visited by recreational users and no designated recreation areas occur within the project area.

ATV tracks were observed in the old two-track road that the pipeline would follow in T 44N, R 19W, Section 31, at the base of the steep cliff near County Road 4R.

3.3.4 Visual Resources

The proposed project area lies within a natural piñon-juniper woodland on rolling hillsides, with green/gray sagebrush areas on the flatter valleys. Existing red dirt two-track roads cross the landscape and a few existing tan to reddish bare-ground scars occur on the hillside, where the pipeline is proposed. Light tan vertical escarpments are visible in the background. Range improvements, including stock ponds and fences, are visible scattered throughout the landscape.

The 1985 RMP has no Visual Resource Management (VRM) designations, nor do any of the amendments. According to the BLM Handbook 8410 Visual Resource Inventory, interim VRM classes are established where a project is proposed and there are no RMP-approved VRM objectives (BLM 1985). These classes are developed using the guidelines in the handbook and must conform to the land-use allocations set forth in the RMP that covers the project area. A Visual Resources Inventory (VRI) conducted in 2013 designates the project area as a Visual Resource Inventory (VRI) Class III area. VRI Class III areas/corridors are situated where moderate levels of energy development currently exist and that are expected to increase (BLM 2013b). Using the VRI inventory, an interim designation of VRM Class III will be utilized for purposes of analyzing the visual impacts associated with this project.

The area is infrequently used by oil and gas workers, ranchers, ATV recreationists, and hunters. The proposed well pad is located on a reclaimed pad dominated by grasses, but surrounded by piñon-juniper woodlands. A network of named and unnamed two-track roads and old seismic scars exist throughout the project area, and the pipeline ROW follows existing roads the majority of its length. A Key Observation Point (KOP) along County Road 4R was established to record the existing scenic conditions and evaluate potential visual effects of the most visible portion of the pipeline and the two TUAs. A Visual Contrast Rating study was completed for the KOP and is part of the project record on file at the BLM Tres Rios Field Office.

3.3.5 Paleontology

Two geologic formations were mapped on the proposed well pad and pipeline route that have the potential for paleontological resources (Dakota Sandstone and Burro Canyon Formation). As a result, Western Slope Paleontological Services (WSP) (BLM permit COC74327) conducted a paleontological resource survey of the proposed well pad and pipeline route. The primary survey was conducted on October 19, 2012, with a follow-up survey of the alternate pipeline route during July 2013. The survey was conducted by walking along the boundaries of the proposed well pad and pipeline corridor, while providing for a 100-foot-wide survey boundary along the proposed pipeline corridor. No vertebrate or other significant fossil material was found on the surface during this survey, resulting in a negative declaration for this project. The proposed pipeline reroute includes 4,531 feet of buried pipeline. The buried portion of the pipeline lies entirely in Quaternary alluvium deposits overlying bedrock of the Morrison Formation, which the BLM identifies as a “highly fossiliferous geologic unit.” Likewise, the proposed well pad is

situated atop the Dakota Sandstone, which also has high probability of uncovering paleontological resources (WSP 2013).

3.3.6 Soils

Surficial soils within the Proposed Action are primarily associated with the Dakota Sandstone and the Burro Canyon Formation. Soil parent materials are predominantly eolian material and sources from sandstone and shale.

There are seven soil types mapped for the project area (NRCS 2014). Dominant soil types include the Bodot, dry-Ustic Torriorthents Complex; Monogram loam; and Pinon-Bowdish-Progresso loams, cool. The soils where CCI proposes to bury the pipeline are Monogram loam with 1 to 8 percent slopes. Monogram loams are very deep (60 inches), derived from eolian deposits, and are not hydric with a moderate erosion potential. The Pinon-Bowdish-Progresso loams soil type is alluvium derived from sandstone. It occurs toward the bottom of the steep slope and north of the northern TUA. Of the seven soil types, four have severe erosion potential and two have moderate erosion potential (Table 9).

Table 9. Soil Types for the Project Area, Location, and Erosion Hazard

Soil Type ¹	Erosion Hazard
Bodot, dry-Ustic Torriorthents complex, 5 to 50 percent slopes	Severe
Borolls-Rock outcrop complex, 40 to 90 percent slopes	Severe
Gladel-Bond-Rock outcrop complex, cool, 3 to 25 percent slopes	Severe
Monogram loam, 1 to 8 percent slopes	Moderate
Monticello-Witt loams, 1 to 3 percent slopes	Slight
Pinon-Bowdish-Progresso loams, cool, 1 to 12 percent slopes	Moderate
Rock outcrop-Orthents complex, 40 to 90 percent slopes	Severe

¹ NRCS 2014

Erosion from surface water runoff was evident during the December 2012 field visit on the steep hillside, where the pipeline would be pulled.

3.3.7 Threatened, Endangered, and Candidate Plant and Wildlife Species

Pursuant to the Endangered Species Act of 1973 (as amended) potential effects to threatened, endangered, proposed, and candidate species (collectively referred to as T&E species) resulting from implementation of federal actions should be assessed. The BLM obtains a list of T&E species to be considered for ground-disturbing activities from the U.S. Fish and Wildlife Service (USFWS) annually; the list was last updated on December 10, 2013 (BLM 2013a). Fifteen T&E species were identified by the USFWS as potentially occurring on BLM lands managed by the Tres Rios Field Office. Two species—Gunnison sage-grouse (*Centrocercus minimus*) (proposed endangered) and Schmoll's milkvetch (*Astragalus schmolliae*) (candidate)—were evaluated for potential habitat in the project area. The well pad and majority of the pipeline are located within unoccupied proposed critical habitat for Gunnison sage-grouse (Figure 5). T&E species'

distributions and habitat potential were evaluated using GIS map review, cited literature, field visits to the project area, and personal communication with the Tres Rios Field Office biologists.

3.3.7.1 Plants

Schmoll's milkvetch occurs in dense piñon-juniper woodlands on mesa tops in the Mesa Verde area, preferring deep, red loess soils and is generally less common near cliff edges and in ravines (Anderson 2004). This habitat occurs in portions of the project area.

Grassland Consulting, Inc. (Grasslands) conducted a presence/absence survey for rare plant species including Schmoll's milkvetch between May 30 and June 5, 2013. Rare plant surveys consisted of pedestrian surveys within a 10-meter buffer around the pipeline and access road and a 300-meter buffer surrounding the well pad, for a total of 143 acres. Parallel transects were spaced 5 to 10 feet apart. This survey did not include the portion of the TUAs outside of the 10-meter buffer for the pipeline (totaling 0.8 acre); however the TUAs are not located within potential habitat. No individuals of Schmoll's milkvetch were observed during the surveys.

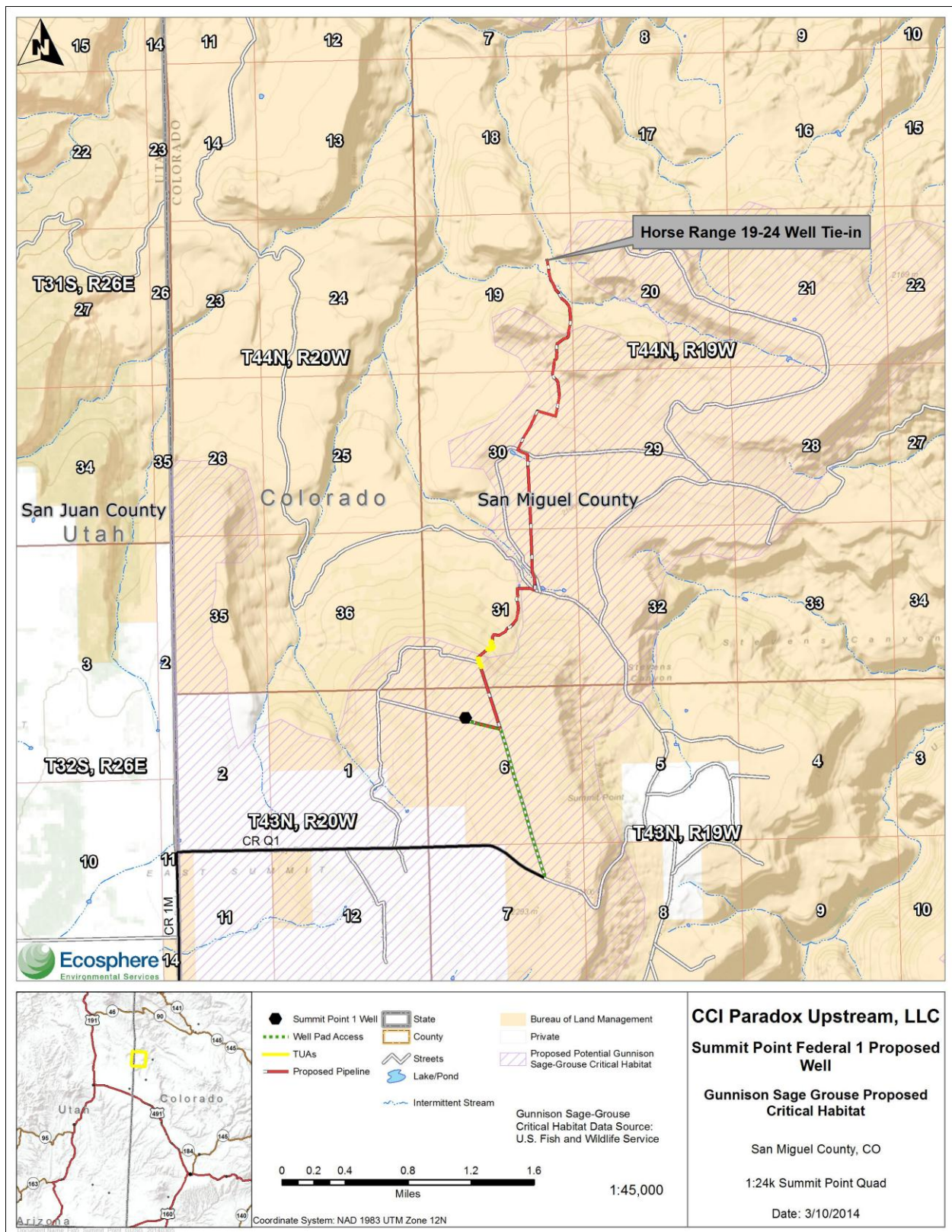


Figure 5. Gunnison Sage-Grouse Proposed Unoccupied Critical Habitat in Relation to the Proposed Action.

3.3.7.2 Wildlife

The project area is outside of the current range of Gunnison sage-grouse and no birds are known to occur in the project area. The USFWS has proposed critical habitat for Gunnison sage-grouse beyond the areas known to be occupied by birds, since the USFWS believes the current habitat is not sufficient to sustain the population in the long term (USFWS 2013a). Based on a GIS-review of vegetation, the project area does not meet Primary Constituent Element #1 for critical habitat: vegetation composed of at least 25 percent sagebrush within 0.9-mile radius of a given location, as described in the federal register (USFWS 2013b). Therefore, potential habitat does not exist in the project area for Gunnison sage-grouse.

3.3.8 Migratory Birds

Migratory birds associated with piñon-juniper woodlands and sagebrush communities nest in the project area during the breeding season. Species observed and likely breeders include juniper titmouse (*Baeolophus ridgwayi*), dark-eyed junco (*Junco hyemalis*), mountain bluebird (*Sialia currucoides*), western scrub jay (*Aphelocoma californica*), mountain chickadee (*Poecile gambeli*), and northern flicker (*Colaptes auratus*). Nest initiation dates vary per species, but the primary nesting season for the project area is May 1 through June 30 for the majority of species. Nests may be present in trees, shrubs, and below shrubs in grass clumps within the project area.

Raptor nesting habitat also exists in the project area. Grasslands conducted a nesting raptor survey within 0.5 mile of the Proposed Action from June 3 to 7, 2013 (Grasslands 2013b). Surveys were conducted for forest-dwelling and cliff-nesting raptors. One active Cooper's hawk (*Accipiter cooperii*) nest, two common raven (*Corvus corax*) nests, and three raptor perch sites on a cliff face were observed.

The BLM Washington Office Interim Management Guidelines (WO-2008-050) provides guidelines for implementation of the Migratory Bird Treaty Act, including best management practices such as a timing restriction for projects during the primary nesting season.

3.3.9 Water Resources and Quality

The project area includes ephemeral drainages that flow northwest into McIntyre Canyon, which ultimately flow into the Dolores River approximately 10 miles from the project area. Two intermittent stock ponds are mapped along the pipeline route (Figure 6). No wetlands, perennial water sources, riparian habitat, or riparian species were observed immediately adjacent to or within a 0.5-mile radius of the project area. The hydrologic regime near the project area is such that surface water flows are experienced only after large precipitation events. Key factors that influence the surface water quality in the project area include rapid runoff, existing roads, oil and gas well pads, and livestock grazing. The pipeline would cross three mapped United States Geologic Survey National Hydrologic Dataset "blue lines" north of County Road 4R (Figure 6) (USGS 2008).

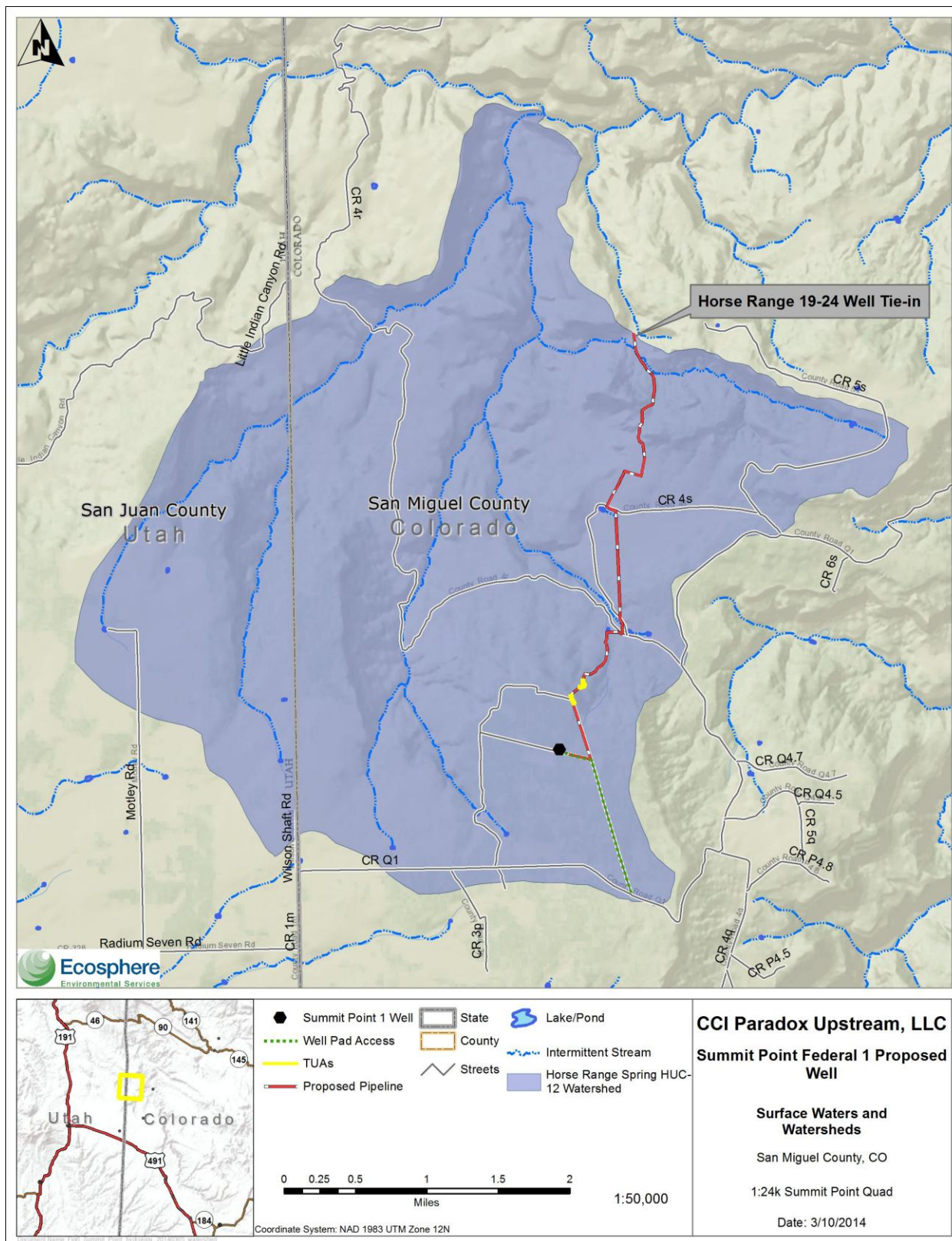


Figure 6: Surface Waters and Watersheds

4. Environmental Effects

4.1 Introduction

This section describes the potential environmental effects of the No Action and the Proposed Action alternatives on the physical, biological, and other resources in the project area described in Chapter 3. Applicant-committed Design Features are described by the operator in the APD and are analyzed as part of the Proposed Action. The BLM will apply COAs (listed in Appendix A) that will be analyzed as mitigation measures after conducting the effects analysis.

4.2 General Analysis Assumptions and Guidelines

In accordance with 40 CFR 1502.16, potential environmental effects are discussed in this Chapter for each resource for the No Action and the Proposed Action alternatives. An environmental effect is defined as a change in the quality or quantity of a given resource due to a modification in the existing environment resulting from project-related activities. Effects may be beneficial or adverse, may be a primary result (direct) or secondary result (indirect) of an action, and may be short-term, long-term or permanent. The Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508) defines the effects and effects that must be addressed and considered by federal agencies in satisfying the requirements of the NEPA process.

The environmental analysis was completed utilizing existing resource information and on-the-ground field surveys completed in 2012 and 2013. Effects may vary in degree from a slight discernible change to a total change in the environment. Unless specifically described, short-term effects are defined as those lasting 1 to 5 years or less and long-term effects last more than 5 years.

4.3 Direct and Indirect Effects

Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

4.3.1 Alternative A – No Action

This section analyzes the direct and indirect effects of the No Action alternative to the resources described in Chapter 3: Affected Environment.

4.3.1.1 Air Quality

The proposed action elements would not be authorized and therefore none of the potential emissions would occur. None of the temporary impacts to air quality would occur. The incremental increase to global green house gas (GHG) burden would not happen, however it is entirely likely the predicted climatic changes will occur regardless.

4.3.1.2 Cultural Resources and Native American Religious and Other Concerns

No project-related effects to cultural resources would occur under the No Action alternative.

4.3.1.3 Recreation

Access to the project area for recreationists would not be disrupted under the No Action alternative. There would be no increase in trucks and heavy equipment on area roads if the Proposed Action were denied.

4.3.1.4 Visual Resources

Under the No Action alternative, no new project-related effects to visual resources would occur. Existing visual disturbances from old seismic lines, roads, and grazing management within the project area would remain, as described in the Chapter 3: Affected Environment.

4.3.1.5 Paleontology

No project-related effects to paleontology resources would occur under the No Action alternative.

4.3.1.6 Soils

Under the No Action alternative, grazing and recreation activities in the project area would continue to contribute positive and negative effects to surface soils. Erosion would continue on steep slopes and existing road maintenance would be conducted by the BLM and San Miguel County.

4.3.1.7 Threatened, Endangered, or Candidate Plant and Wildlife Species

Under the No Action alternative, there would be no effects to listed species, since none exists in the project area.

4.3.1.8 Migratory Birds

Under the No Action alternative, disturbance to nesting migratory birds and loss of habitat would be minimal from grazing, recreation, and other oil and gas activities.

4.3.1.9 Water Resources and Quality

Under the No Action alternative, there would be no additional effects to project area surface or groundwater resources. Ongoing effects to surface water from existing surface disturbance and associated erosion from precipitation runoff would continue.

4.3.2 Alternative B – Proposed Action

This section analyzes the direct and indirect effects of the Proposed Action to the resources described in Chapter 3: Affected Environment.

4.3.2.1 Air Quality

In general, the proposed action will have a temporary negative impact to air quality which will mostly occur during the construction phase (see Table 10 and 11 below). Utilization of the access road, surface disturbance associated with the well pad development, and construction activities such as drilling, hydraulic fracturing, well completion, and equipment installation will all impact air quality through the generation of dust related to travel, transport, and general construction. This phase will also produce short term emissions of criteria, hazardous, and greenhouse gas pollutants from vehicle and construction equipment exhausts. Once construction is complete the daily activities at the site will be reduced to operational and maintenance checks, which may be as frequent as daily visits. Emissions will result from vehicle exhausts from the maintenance and process technician visits, as well as condensate/oil and produced water collection or load out trips. The pads can be expected to produce fugitive emissions of well gas and liquid flashing gases, which can contain a mixture of methane, volatile organic compounds, hazardous air pollutants, inert or non-regulated gases, and or water vapor. Fugitive emissions may result from pressure relief valves and working and breathing losses from any tanks located at the site, as well as any flanges, seals, valves, or other infrastructure connections used at the site. Liquid product load-out operations will also generate fugitive emissions of VOCs during transfers to haul trucks from the storage tanks.

Ozone is not directly emitted like other criteria pollutants. Ozone is chemically formed in the atmosphere via interactions of oxides of nitrogen (NOX) and volatile organic compounds (VOCs) in the presence of sunlight and under certain meteorological conditions (NOX and VOCs are ozone precursors). Ozone formation and prediction is complex, generally results from a combination of significant quantities of VOCs and NOX emissions from various sources within a region, and has the potential to be transported across long ranges. Therefore, it is typically not appropriate to assess (i.e. model) potential ozone impacts of a minor project on regional ozone formation and transport. However, it is reasonable to conclude that the minor amount of precursor emissions from this project will not have a measurable effect on regional ground level ozone formation.

Emission estimates from the proposed well site were calculated for this EA, and are disclosed in Table 11 below. The emissions inventories (EI) considered reasonably foreseeable oil and gas development activities for the proposed well and includes emissions from both construction and production operations. The following pollutants were inventoried where an appropriate basis, methodology, and sufficient data exists: CO, NOX (includes NO₂), PM_{2.5}, PM₁₀, SO₂, VOCs, HAPs, CO₂, CH₄, and N₂O. The EI was developed using reasonable but conservative scenarios for each activity. Production emissions were calculated based on full production activity for the entire year (2014), and since this will not be the case in reality, the production emissions are considered conservative. Potential emissions were calculated assuming the minimum/basic legally required control measures, site specific voluntary operator controls, operational parameters, and equipment configuration data that was provided by the applicant.

The following assumptions were applied consistently to all potential activities:

- The EI used a disturbed surface area of 4 acres for the initial well pad size, and an access road construction length of 1 ¼ miles.
- All disturbed surfaces (pads and access roads) would receive appropriate application of water (during construction) or dust palliatives (during operations). The assumed control efficiency was 50%.
- All diesel fuel would be standard #2 grade (500 ppm sulfur) or better (i.e. ULSD).
- The well pad equipment would include tanks, separation equipment, a desulfurization unit, associated heaters, but no well head compression.
- All pneumatic devices were specified as 'low bleed'.
- 'Natural gas' would be piped directly into a 3rd party gathering system.
- Completion flaring will be employed to control flow-back gases (assumed control efficiency of 75%).
- Drill rigs and frac engine emissions were based on EPA Non-road Tier 2 emissions standards.
- Anticipated well life is assumed to be 20 years.

The project emissions are relatively small compared to the aggregate county emissions (shown in Table 10 below, EPA National Emissions Inventory - 2011). Particulate matter (i.e. fugitive dust) from construction, specifically ground disturbing activities, generates the most emissions from the listed process activities as a whole.

APCD published modeling guidance (Colorado Modeling Guideline for Air Quality Permits - January 2002, April 2010) that established stationary source thresholds for requiring additional analysis when emissions are exceeded on an annual or short term basis. The modeling thresholds were developed to identify new sources and modifications that would have relatively small impacts on ambient air quality and would not warrant further analysis. The thresholds establish levels of emissions which have a low probability of causing or contributing to an exceedance of an air quality standard. This project's calculated emissions are below the APCD established thresholds. Although not specifically a stationary source (i.e. most of the emissions sources for this project are mobile or portable), the context allows for a comparative analysis of the estimated emissions that suggests the project would have an insignificant impact on local or regional air quality.

Given the distance to the nearest Class 1 area (approx. 60 miles) and the minor amount of limited duration emissions associated with this project, no additional analysis will be presented to address AQRV impacts at any Class 1 area. It is reasonable to conclude that if near field

modeling (i.e. less than 50km) would not be required for a facility under the CDPHE rules, that far field modeling would yield no significant impacts for any nearby Class 1 areas

Table 10. County Level Emissions (2011 EPA NEI)

Colorado County Emissions Reported by Sector (tons)											
San Miguel	PM10	PM2.5	VOC	CO	NOX	SO ₂	CO2	CH4	N ₂ O	NH3	HAPs
Agriculture	49.94	9.99	0	0	0	0	0	0	0	105.97	0
Biogenics	0	0	12,489.7	1,951.28	143.03	0	0	0	0	0	1,392.62
Bulk Gasoline Terminals	0	0	10.03	0	0	0	0	0	0	0	0.03
Commercial Cooking	8.55	7.91	1.07	3.16	0	0	0	0	0	0	0.42
Dust	686.39	101.4	0	0	0	0	0	0	0	0	0
Fires	110.23	93.41	262.13	1,115.34	11.6	7.27	11,163.95	53.82	0	18.24	22.16
Fuel Comb	23.18	22.89	118.58	304.16	352.86	2.07	0	0	0	2.59	21.17
Gas Stations	0	0	4.45	0	0	0	0	0	0	0	0.24
Industrial Processes	40.22	12.26	307.29	11.98	24.11	0.46	0	0	0	0	22.4
Miscellaneous	0	0	9.38	0	0.02	0	0	0	0	0	0.69
Mobile	25.97	23.25	319.77	2,126.14	296.09	1.38	65,994.27	5.06	1.9	3.17	84.75
Solvent	0	0	72.97	0	0	0	0	0	0	0	27.85
Waste Disposal	0.03	0.02	0.22	0.1	0.01	0.01	0	0	0	0.03	0.02
Sum Totals:	944.51	271.13	13,595.61	5,512.15	827.71	11.2	77,158.21	58.88	1.9	129.99	1,572.37

Table 11. Estimated Maximum Annual Emissions (2014) from Summit Point

[illegible]

[illegible]

Greenhouse Gas Emissions and Climate Change: According to the U.S. Global Change Research Program (2009), global warming is unequivocal, and the global warming that has occurred over the past 50 years is primarily human-caused. Standardized protocols designed to measure factors that may contribute to climate change, and to quantify climatic impacts, are presently unavailable. Moreover, specific levels of significance have not yet been established by regulatory agencies. Predicting the degree of impact any single emitter of GHGs may have on global climate, or on the changes to biotic and abiotic systems that accompany climate change is highly complex, has considerable uncertainty, and requires intense computer modeling (i.e., super computers). As such, no readily available tools exist to predict impacts a project's emissions would have on the global, regional, or local climate. This analysis is therefore limited to comparing the context of total project GHG emissions, and to emissions recently analyzed by EPA. The analysis also discloses readily available information regarding expected changes to the global climatic system and any empirical evidence of climate change that has occurred to date (see cumulative impacts).

The implementation of the Proposed Action Alternative is estimated to contribute 2,295 tons of carbon dioxide equivalent (CO₂(e)) in the maximum year (2014). Annual operating GHG emissions will be 29% of the total emissions shown for the maximum year. Over the 20 year project timeframe the total GHG emissions expected are approximately 14,990 tons. The total provided does not account for the ultimate use or consumption of any produced minerals at this time due to the fact that the ultimate form of use and any additional processing required to render the product to sufficient quality (which would cause changes to the quantity of product) cannot be predicted with any reasonable certainty. Additionally, it should be noted that production values, also estimated at this time (by the proponent), could vary significantly over the life of the project, making any prediction of the quantities of GHG emitted highly speculative.

In 2007, the State of Colorado's GHG emissions were 124,000,000 metric tons. The proposed action's GHG emissions represent about 0.0017 % of the state of Colorado's GHG emissions on a maximum annual basis.

To provide additional context, the EPA has recently modeled global climate change impacts from a model source emitting 20% more GHGs than a 1500MW coal-fired steam electric generating plant (approx. 14,132,586 metric tons per year of CO₂, 273.6 metric tons per year of nitrous oxide, and 136.8 metric tons per year of methane). EPA estimated a hypothetical maximum mean global temperature value increase resulting from such a project. The results ranged from 0.00022 and 0.00035 degrees Celsius occurring approximately 50 years after the facility begins operation. The modeled changes are extremely small, and any downsizing of these results from the global scale would produce greater uncertainty in the predictions. The EPA concluded that even assuming such an increase in temperature could be downscaled to a particular location, it "would be too small to physically measure or detect", see Letter from Robert J. Meyers, Principal Deputy Assistant Administrator, Office of Air and Radiation re: "Endangered Species Act and GHG Emitting Activities (Oct. 3, 2008).

This project's emissions are a fraction of the EPAs modeled source and are shorter in duration, and therefore it is reasonable to conclude that the project would have no measurable climate change impacts.

Table 12. Greenhouse Gas Emission Comparisons

Inventory Description	CO2e Emissions (106 mtpy)	Proposed Action Percentage
Colorado (2007)	124	0.0017
Total US Greenhouse Gases	6,957	0.00003

4.3.2.2 Cultural Resources and Native American Religious and Other Concerns

The initial cultural survey conducted by GRI observed an NRHP-eligible site along the proposed pipeline route. As a result of this finding, an alternate pipeline route was proposed to avoid this site and an additional cultural survey was conducted. Along the alternate pipeline route, GRI observed the Silvertone Mine that is eligible for inclusion on the NRHP. However, this site would be avoided by pipeline construction.

The proposed well pad would be constructed on an abandoned well pad and the majority of pipeline construction would be on the surface. However, 4,531 feet of the 20,177-foot pipeline would be buried. CCI would require that its personnel, contractors, and subcontractors comply with federal regulations intended to protect cultural resources. Effects to cultural resources could still include destruction of unidentified cultural resources.

The BLM has required the following COAs (see Appendix A) to further protect cultural resources in the area:

- All pipeline activities must occur within the 200-foot corridor previously surveyed and within the footprint of the well pad area, which was previously surveyed.
- Within the surveyed areas, all cultural site boundaries will be marked for avoidance. All material used to mark cultural sites for avoidance will only be removed by a permitted archaeologist (i.e., cultural resource consultant) within 10 days after the completion of construction.
- All work, staging, and parking of equipment will be confined to the well pad, roads, and pipeline ROW. No pullouts or off-road parking will be allowed unless specifically authorized.
- All ground-disturbing activities will be monitored by a permitted archaeological consultant. Only identified sites will be monitored for aboveground pipeline work, but all buried pipeline work will require monitoring by a permitted archaeological consultant.
- The boundary of the cultural site near the southern TUA will be marked and avoided by construction.

Additional COAs include the applicant emphasizing to its personnel the importance of preventing disturbance, defacement, or removal of archaeological materials; contacting SHPO within 48 hours of cultural discoveries; providing an applicant field agent to communicate with the archaeological consultant and assist the BLM in establishing avoidance procedures; and taking additional cultural site protection measures recommended by the BLM. There would be no effects to Native American religious concerns as none are present in the project area. Following the adherence to Design Features and COAs, no sites that are recommended as eligible or “needs data” would be adversely affected by the Proposed Action and effects to cultural resources would be avoided.

4.3.2.3 Recreation

CCI would maintain public access along the roads used for construction access to the well pad and during construction of the proposed pipeline sections adjacent to the two-track roads. There would be no area closures, no existing roads closed, and no barriers to public access during the construction of the well pad and pipeline. CCI would provide escorts to get public land users through the project area during drilling operations, if necessary. In addition, CCI would post signs along roads potentially affected by pipeline installation to let public land users know if delays would be expected. CCI would be responsible for the maintenance of the well pad access road. Even with implementation of these Design Features, short delays are expected to recreationists traveling through the project area during construction. The Proposed Action is planned in the summer of 2014 and is not expected during the fall hunting season. Impacts to big game species, including disturbance from construction and avoidance of the project area, would occur in the short-term, but would not continue in the long-term. CCI would install wildlife-friendly fencing to minimize injury to big game and provide escape routes for animals in trenches. No impacts to designated recreation areas would occur since none exist in the project area.

CCI’s temporary improvement of the reclaimed two-track road to access the northern TUA at the base of the steep cliff, where the pipeline would be pulled, may increase unauthorized off-road vehicle use. Project COA #11 will require CCI to pull cleared trees, logs, and rocks back into the access road and pipeline ROW; re-seed; and post signs stating “Reclamation Area-Please Keep Off” to discourage unauthorized use. The implementation of Design Features and COAs would reduce the chance of unauthorized off-road recreation use associated with the Proposed Action.

4.3.2.4 Visual Resources

Construction of the proposed well pad on a reclaimed pad would convert the approximately 4-acre grassy area to an industrial use with a pump jack, pipes, valves, large tanks and other equipment. The aboveground pipeline would require less vegetation clearing than the buried pipeline. However, the aboveground pipeline may damage trees and shrubs, especially in the dense woodlands on the mesa near the well pad and well tie-in to Horse Range 19-24 well pad. The aboveground pipeline would oxidize to a rust color and would be visible long term. It may

be more visible on rough terrain, where it is suspended aboveground by several feet, or through the sagebrush flat on Horse Range Mesa, where it can't be strung through trees.

The location of the southern TUA on the edge of the cliff would remove several large trees and create a visual break in the vegetation along the cliff, drawing attention to the disturbance. The rolling topography and piñon-juniper woodland would partially obscure project disturbance areas from existing roads.

CCI has committed to painting any permanent aboveground structures with a flat, non-reflective color, determined by the BLM to be Shale Green. Painting equipment would help reduce the visual contrast of equipment with surrounding vegetation. In addition, the BLM has added the following COAs that would mitigate effects to visual resources (see also Appendix A):

- Any tree trunks, boulders, etc. that are removed from the reclaimed road during pipeline construction or pipeline maintenance (for the section of pipeline from the cliff top to County Road 4R [see Figure 2]), will be replaced and the road will be seeded with a BLM-approved seed mix (Table 4).
- All work, staging, and parking of equipment would be confined to the well pad, approved roads, and pipeline ROW.
- The southern TUA should be set back from the rim approximately 50 feet, leaving trees directly on the edge to provide visual screening.
- Minimal trees will be cleared between the two TUAs and during pipeline installation adjacent to project area roads.
- The steel pipeline will be removed upon final reclamation.

The Visual Contrast Rating study for the KOP along County Road 4R determined that the Proposed Action, with the COAs applied, would meet the VRM guidance for an interim VRM Class III area, which allows for moderate changes to the landscape that may attract attention but not dominate the view of the casual observer (BLM 2013b). The project would be visible for 1 to 2 minutes from a vehicle driving on County Road 4R.

Implementation of the Design Features and BLM COAs would result in project activities meeting interim VRM Class III objectives in the short term (within 1 year after drilling is completed) and in the long term (5 to 20 years), following interim reclamation.

4.3.2.5 Paleontology

No paleontological resources were observed during the paleontological survey. The pipeline would be buried for 4,531 feet and a blooie pit may be required on the well pad. In areas where excavation and dirt work would occur, CCI would suspend operations if vertebrate fossil materials are discovered during construction activities. Since the geology in the project area has a high chance of containing paleontological resources and because fossils are not always

recognizable to lay people, the Proposed Action could destroy or damage paleontological resources in the construction area.

The BLM would require CCI to provide a credentialed paleontological monitor if a blooie pit is required and during construction of the section of buried pipeline (see COA #9, Appendix A). Implementation of the Design Features and BLM COA would result in minimization of impacts to paleontological resources discovered during construction activities in both the short and long term.

4.3.2.6 Soils

Surface disturbance along the 1.25 miles where the well pad access road would be widened and improved would result in 5.3 acres of disturbance, most of which is in existing disturbance from the two-track road. Approximately 78 percent of the proposed pipeline would be constructed aboveground, reducing ground disturbance. CCI would disturb 4 acres for construction of the well pad, 5.2 acres for the 4,531 feet of buried pipeline, and 1.4 acres for the two TUAs associated with pipeline construction, totaling 10.4 acres of surface disturbance. Topsoil would be segregated and utilized for interim reclamation for the section of buried pipeline, the two TUAs, and 2.6 acres of the well pad that would be reclaimed after drilling activities are completed.

Soil disturbance from construction would increase erosion potential. The aboveground pipeline would not require blading or removal of vegetation, reducing erosion potential. CCI would pull the pipeline along the steep slope between the two TUAs (Figure 2), avoid operating large equipment on the steep slope, and remove the minimum amount of trees and shrubs to reduce the potential for erosion along that section of the pipeline. The section of buried pipeline is located on deep soils on fairly level ground, where erosion potential is moderate (NRCS 2014). CCI would install stormwater best management practices (BMPs) consistent with its SWMP to prevent discharges of sediment off disturbed areas associated with the pipeline, TUAs, and the well pad and to reduce effects from soil erosion. Pipeline construction, inspection, and maintenance would not occur if equipment would make ruts 4 inches deep for 10 feet or longer, thus preventing degradation of dirt roads in the project area.

Section 2.3.8 of this Proposed Action describes the interim reclamation methods that would reduce soil erosion effects including stockpiling topsoil and spreading it on disturbed areas (seed-bed preparation), reseeding, and installing erosion control products until final stabilization is achieved. CCI would conduct construction and production activities consistent with its SWMP for Andy's Mesa, Hamilton Creek, and Fossil Federal Fields to minimize and prevent erosion and sedimentation. The SWMP also requires routine inspection of the stormwater BMPs, as required by the Colorado Department of Public Health and Environment (CDPHE) to assure that they are minimizing erosion. Possible BMPs to be implemented include straw wattle perimeter control, earthen berms, and diversion ditches.

Additional BLM COAs that would mitigate effects to soils include the following:

- For the steep section of pipeline from the cliff top to County Rd 4R, any tree trunks, boulders, or logs removed from the reclaimed road during pipeline construction or pipeline maintenance will be returned and the road will be seeded with a BLM-approved seed mix. CCI will place signs reading “Reclamation Area – Please Keep Off” at each end of this ROW section.
- Vehicle and pedestrian traffic will be restricted to the well pad, access roads, and pipeline routes.

Preventing off-road access would help to make interim reclamation successful by reducing soil disturbance and allowing vegetation to regrow. Implementation of the Design Features and BLM COAs would minimize effects to the project area from soil erosion in the short term and ensure long-term success of interim reclamation.

4.3.2.7 Threatened, Endangered, and Candidate Plant and Wildlife Species

Overall, 10.4 acres of vegetation would be removed during construction of the Proposed Action. This includes 4 acres of reclaimed grasses for construction of the well pad and 6.4 acres of piñon-juniper woodland and sagebrush flat (i.e., 5 acres of buried pipeline and 1.4 acres for the TUAs). One USFWS candidate plant species (Schmoll’s milkvetch) has potential habitat in the project area. Grasslands Consulting, Inc. conducted a sensitive plant survey in June 2013 that did not discover any Schmoll’s milkvetch plants (Grasslands 2013a). However, this survey did not include 0.8 acre of the two TUAs outside of the 10-meter pipeline buffer. Individual plants may be damaged during vegetation clearing in the two TUAs. Given the extensive negative plant surveys for the project area, it is unlikely that Schmoll’s milkvetch would occupy these unsurveyed areas, and impacts to this candidate species are not expected.

Table 13 summarizes effects determinations for T&E species. No effects to the majority of T&E species would occur since none occurs within 0.5 mile of the project area.

Table 13. Effects Determinations for USFWS Listed Species and Critical Habitat with Potential to Occur on BLM Tres Rios Field Office Lands

Species	Status	Project Effects	Rationale
Mammals			
Canada lynx	Threatened	No Effect	No suitable habitat occurs in the project area.
New Mexico meadow jumping mouse	Proposed Endangered	No Effect	No suitable habitat occurs in the project area.
North American wolverine	Proposed Threatened	No Effect	No suitable habitat occurs in the project area.
Birds			
Mexican spotted owl	Threatened	No Effect	No suitable habitat occurs in the project area.
Southwestern willow flycatcher	Endangered	No Effect	No suitable habitat occurs in the project area.
Western yellow-billed cuckoo	Proposed Threatened	No Effect	No suitable habitat occurs in the project area.
Gunnison sage-grouse	Proposed Endangered	No Effect	No suitable habitat occurs in the project area.
Gunnison Sage-Grouse Critical Habitat	Proposed Critical Habitat	No Effect	Based on GIS analysis, project area does not meet the primary constituent elements of minimum sagebrush cover.
Fishes			
Bonytail chub	Endangered	May Affect Likely to Adversely Affect	Water depletions to the Dolores River Basin.
Colorado pikeminnow	Endangered	May Affect Likely to Adversely Affect	Water depletions to the Dolores River Basin.
Humpback chub	Endangered	May Affect Likely to Adversely Affect	Water depletions to the Dolores River Basin.
Razorback sucker	Endangered	May Affect Likely to Adversely Affect	Water depletions to the Dolores River Basin.
Insects			
Uncompahgre fritillary butterfly	Endangered	No Effect	No suitable habitat occurs in the project area.
Plants			
Mesa Verde cactus	Threatened	No Effect	No suitable habitat occurs in the project area.
Mancos milkvetch	Endangered	No Effect	No suitable habitat occurs in the project area.
Pagosa Skyrocket	Endangered	No Effect	No suitable habitat occurs in the project area.

Since the Proposed Action would result in the depletion of 0.5 acre-feet of water from within the Colorado River Basin, this project falls under BLM Colorado's 2008 Programmatic Biological Assessment (PBA) for water depleting activities associated with BLM's fluid minerals program in the Colorado River basin in Colorado.

In response to BLM's PBA, the USFWS issued a Programmatic Biological Opinion (PBO)(ES/GJ-6-CO-08-F-0006) on December 19, 2008, which concurred with BLM's determination that water depletions are "Likely to Adversely Affect" the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker (USFWS 2008). Likewise, the project is also likely to adversely affect designated critical habitats for these endangered fish along the Green, Yampa, White, Colorado, and Gunnison rivers. However, the USFWS also determined that BLM water depletions from the Colorado River Basin are not likely to jeopardize the continued existence of the Colorado pikeminnow, humpback chub, bonytail, or razorback sucker, and that BLM water depletions are not likely to destroy or adversely modify designated critical habitat.

A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) was initiated in January 1988. The Recovery Program serves as the reasonable and prudent alternative to avoid jeopardy and aid in recovery efforts for these endangered fishes resulting from water depletions from the Colorado River Basin. The PBO addresses water depletions associated with fluid minerals development on BLM lands, including water used for well drilling, hydrostatic testing of pipelines, and dust abatement on roads. The PBO includes reasonable and prudent alternatives developed by the USFWS which allow BLM to authorize oil and gas wells that result in water depletion while avoiding the likelihood of jeopardy to the endangered fishes and avoiding destruction or adverse modification of their critical habitat. As a reasonable and prudent alternative in the PBO, USFWS authorized BLM to solicit a one-time monetary contribution to the Recovery Program in the amount equal to the average annual acre-feet depleted by fluid minerals activities on BLM lands.

This project has been entered into the Tres Rios Field Office fluid minerals water depletion log which will be submitted to the Colorado State Office at the end of the Fiscal Year.

If CCI discovers any dead or injured T&E species during construction or operation, the applicant will notify the BLM AO within 24 hours. Additionally, BLM COA #21 will require CCI to report any T&E species observation to the BLM AO. Implementation of the Design Features and BLM COAs would ensure effects to T&E species are avoided in the short and long term.

4.3.2.8 Migratory Birds

Direct effects to migratory birds could include nest destruction, disturbance from noise and human activity, injury from exposure to open stacks, and the indirect effect of habitat removal. Vegetation removal from the buried pipeline would include grasses and shrubs associated with the sagebrush flat on Horse Range Mesa (5 acres) and mature piñon-juniper woodlands (1.4 acres) from the TUAs, for a total of 6.4 acres. Additional trees will be lost from the above-ground pipeline; an estimated 10 percent (1.9 acres) of the trees in the pipeline ROW would be

cut or damaged during construction. The indirect effect to tree-nesting birds would be the long-term loss of nesting and foraging habitat since piñon pine and juniper trees take 30-50 years to regrow. However, piñon-juniper woodlands are prevalent in the surrounding vicinity. If construction is planned for the raptor-breeding season, effects to nesting raptors could include disturbance from noise and human activity. CCI conducted a nesting raptor survey in 2013, with negative findings, and the survey would be repeated the year of construction if activities would occur from March 1 and July 31. Construction would avoid any active raptor nests found within seasonal and spatial buffers thereby eliminating potential adverse impacts to nesting raptors. CCI would construct and equip open top tanks and other equipment with openings with netting or mesh to prevent birds from entering.

In addition, the BLM has added the following COAs that would further mitigate potential adverse effects to migratory birds and raptors (see also Appendix A):

- Migratory bird nest searches will be conducted ahead of ground disturbance from May 1 and June 30.
- If active nests were found, vegetation removal will be postponed until after the nest successfully fledges young or fails, as determined by a BLM-approved biologist.
- With the approval of the BLM AO, a biological monitor may be present during construction to avoid nest destruction/disturbance.
- If vegetation clearing is scheduled to occur from July 1 to April 31, no migratory bird surveys are needed.
- No surface disturbing activity will be allowed within ½ mile of documented active raptor nests from March 1 through July 31, annually. This limitation does not apply if a raptor nest occupancy survey was completed by the BLM or a BLM-approved biologist prior to the current breeding season, and showed no nesting activity.
- The reclamation seed mix was altered to include perennial grasses and shrubs to provide species and structure diversity.
- The dates for required raptor surveys was reduced to March 1 to July 31, to protect the most likely nesting raptors.

The Proposed Action would result in a small loss of migratory bird nesting habitat in the short and long term from loss of trees and shrubs. However, no raptor nests would be affected by the Proposed Action through implementation of the Design Features and COAs. Early and late nesting migratory bird nest may be destroyed or abandoned if they are disturbed during pipeline construction. Final reclamation would aim to restore the areas of disturbance to pre-disturbance conditions once the well is deemed unproductive.

4.3.2.9 Water Resources and Quality

Equipment would work from the two TUAs on the steep hillside for several days to install the proposed pipeline. The pipeline would be welded in the TUAs and a 355-foot section would be pulled with a rope down the hill to avoid operating heavy machinery along the steepest section of the hill. The two-track road would need blading and grading to improve the condition so that equipment could be driven to the northern TUA. The two-track road crosses an intermittent drainage and fill may be temporarily placed in the drainage during construction, but would be removed as soon as construction is complete. Since the steep hill in Section 31, T44N, R19W had evidence of surface water flows and erosion, disturbed soil from the Proposed Action could flow down the intermittent drainage and the flow could be diverted by construction activities. Cross drains would be installed on the slope traverse in this area of the hillside to divert water back into natural drainages. The pipeline would be suspended over all draws so that flood debris could pass underneath. Stormwater control measures would be installed and maintained on all disturbed areas associated with the Proposed Action.

There are a number of sources for potential effects to surface water quality that may occur as a result of developing the Proposed Action. Disturbed project area soils would be subject to erosion by wind and/or water into nearby ephemeral washes, potentially affecting localized surface water quality. These effects would be reduced since the majority of pipeline installation would be aboveground (78 percent). Water quality effects would be further reduced by placing the pipeline away from the steep, narrow road at the north section of the project, and construct the pipeline away from the road fillslope, with no road widening, on the hill in Section 31. Overall, CCI would disturb 10.4 acres of soil surface for construction of the well pad, two TUAs, and 4,531 feet of buried pipeline. CCI would adhere to BLM's Hydraulic Considerations for Pipelines Crossing Stream Channels (BLM 2007) when crossing the ephemeral streams along the proposed pipeline ROW. Disturbance to the three ephemeral drainage bottoms could occur when installing the above ground pipeline.

Spills or releases of hazardous substances, drilling/completion/production solid and fluid products or wastes, fuels and lubricants, or other constituents utilized during access road, well pad construction, drilling, and pipeline construction activities could be washed into surface drainages during storm events. The absence of actively flowing (perennial) surface waters within a 0.5-mile radius of the project elements reduces the potential for surface water quality effects to regional surface water resources. During operation of the well and gathering system, potential effects to surface water quality would include runoff from roads and potential spills from vehicle accidents.

In addition, the BLM has added the following COAs that would further mitigate potential adverse effects to surface water resources and quality (see also Appendix A):

- Culverts at stream crossings or for road and pipeline cross drainage will be 18 inch minimum diameter and will be sized to accommodate the amount of water that would flow down the stream (a 25 year recurrence interval event or greater).
- Construction across ephemeral, intermittent, and perennial drainages and in or near a channel shall not occur during spring runoff i.e. when flows are present from snowmelt events.
- Equipment shall not be refueled within 100 feet of drainage channels, springs, seeps or wetlands.
- Stormwater monitoring will occur within 2 days after every rapid snowmelt or heavy rainfall event greater than 1 hour in duration. Erosion controls will be cleaned or rebuilt within 5 days so they continue to function effectively.
- If fill is placed in ephemeral channels temporarily, a culvert of at least 18 inches must be placed in the fill flush with the channel bottom to allow passage of water in these draws. The fill must be removed immediately after construction, and the original channel and bank dimensions must be restored.
- Stormwater controls will be implemented, inspected, and maintained for full function for all temporary roads as well as the flowline/production line for the life of the project. Inadequate stormwater controls as evidenced by erosion, cutting, soil loss, or sediment transport off site will require additional stormwater control measures. These stormwater controls should be designed and sized at a minimum for the 25-year storm event.
- Pipeline construction and permanent/temporary road construction will not block, dam, or change the natural course of any drainage.
- Suspended pipelines should provide adequate clearance for high-flow events, floating debris, wildlife or livestock.

Implementation of the Design Features and BLM COAs would ensure adverse effects to surface water are minimized or avoided in the short and long term.

4.4 Cumulative Effects

As defined in CEQ regulations (40 CFR 1508.7), cumulative effects include direct and indirect effects likely to occur as a result of implementation of the Proposed Action in combination with direct and indirect effects of past actions, other ongoing activities in the area, recently constructed projects in the area, and projects that would likely be implemented in the area in the near future. If there are no direct or indirect effects to a resource for the Proposed Action, then no cumulative effects analysis is needed for the resource. The geographic area considered in the cumulative effects analysis needs to be sufficient to capture potential effects from the Proposed Action that could combine with on-going or future actions to create significant impacts to environmental resources. Unless otherwise specified, the geographic scope of the cumulative

analysis is defined as the 10,576 acre Horse Spring Range hydrologic unit (hydrologic unit code [HUC]-12) watershed located in Utah and Colorado (Figure 6).

The Proposed Action falls within oil and gas development that was assessed in the 1991 RMP Amendment/FEIS cumulative impacts analysis. The Proposed Action falls within Region 4, designated as high potential for oil and gas development, with a projected 104 wildcat wells and 136 development wells (BLM 1991). The RMP/FEIS determined that “cumulative impacts of [oil and gas leasing and development] analyzed in the FEIS appeared to be insignificant. Wildlife is the resource most subject to impacts but these were determined to be insignificant” (BLM 1991).

4.4.1 Past, Present, and Reasonably Foreseeable Actions

The project area is located in a fairly remote, undeveloped region of San Miguel County. Based on the reasonable foreseeable development scenario included in the Amendment to the RMP (BLM 1991) the primary past, ongoing, and foreseeable future actions that would contribute to potential cumulative effects include:

- **Livestock Grazing** – Livestock grazing has been a prominent land use within the project area currently and historically. Twelve intermittent stock ponds exist in the watershed. Livestock grazing will continue to occur on public lands and be monitored and regulated according to BLM standards
- **Recreation** – Past and present activities include big game hunting, off-road foot, and ATV travel. All of these recreationists use the 34 miles of roads within the watershed to access BLM land and State Wildlife lands. Dispersed recreation activities will continue and potentially increase, as populations and exploration of natural areas increase.
- **Oil and Gas Exploration** – Seven wells lie within the Horse Range Spring watershed, but all are shut-in or abandoned and are undergoing reclamation. The closest producing well is the McIntyre Canyon 17-21, 3.8 miles north of the proposed well pad. The Proposed Action would mark the first active drilling for several years. – Given larger energy market trends, it is reasonable to assume that oil and gas companies will continue to expand their exploration programs in the region. If this proposed well is productive and the connecting pipeline is constructed, oil and gas development in this geographic area could be accelerated. However, additional development would require further NEPA analysis to identify and minimize potential effects.
- **Uranium Exploration and Mining** – The project area is part of the Uravan Mineral Belt, which has undergone extensive exploration and mining from the 1940s through the 1980s, with some degree of activity continuing today, especially in regions south of the project area. A proposed uranium mill in Paradox Valley could potentially increase uranium exploration and development activity in the region. However, larger and more uncertain market conditions would dictate the pace and extent of uranium development.

4.4.2 Alternative B – Cumulative Effects

The Proposed Action includes Design Features that would reduce or eliminate direct or indirect effects. Furthermore, BLM has included a set of COAs (Appendix A) that must be met during construction, operation, and reclamation of the project. Therefore, there would be no cumulative effects for the Proposed Action for the following resources because the Design Features or COAs would mitigate potential effects:

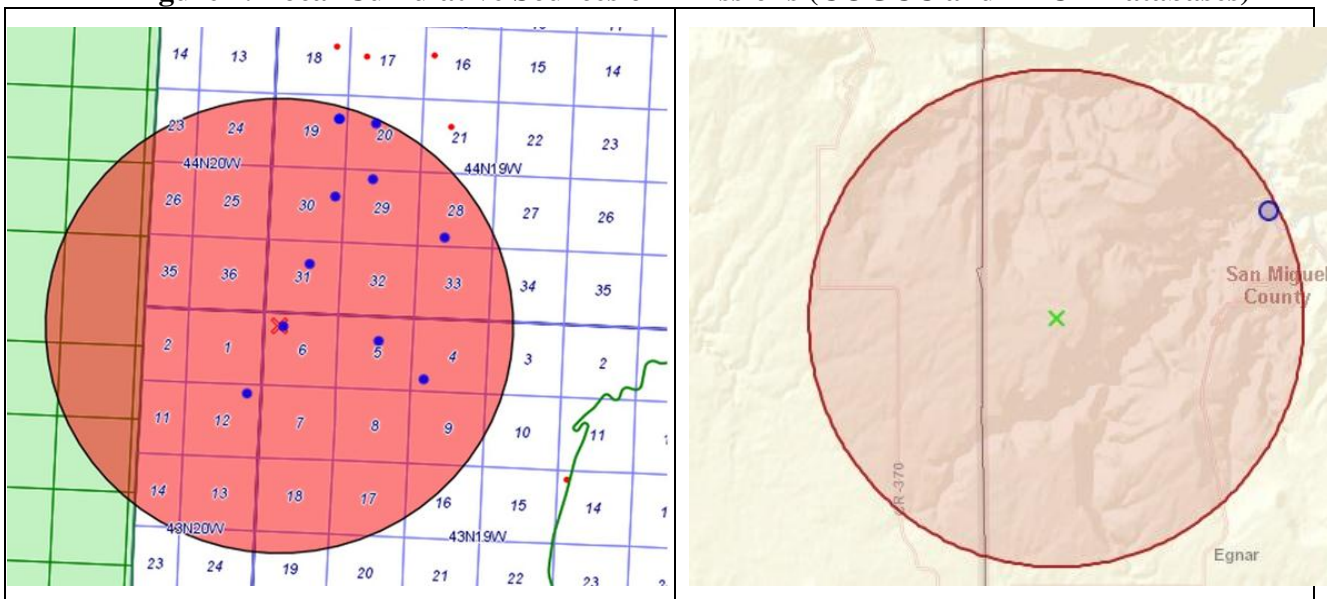
- Cultural Resources and Native American Religious and Other Concerns
- Paleontology
- Soils

The resources below are analyzed in more detail because of the potential for direct or indirect effects to result in cumulative effects with on-going or future development or use.

4.4.2.1 Air Quality

While not widespread, oil and gas development does occur in the area. A GIS query of the Colorado Oil and Gas Conservation Commission (COGCC) database returned approximately 15 locations of past and present oil and gas development within 5km of the Summit Point location. Of these 15 locations, only one is actively producing, another is shut in, and the remainder are either dry and abandoned or represent abandoned locations. Similarly, a search of the areas stationary sources of pollution using CDPHEs interactive map returned only a single source of VOCs within a 10km radius (Slick Rock Metering, 4.9 tons of VOC per year). Queries for NOX, PM10, SO2, and CO within the 10km radius did not return any results.

Figure 7. Local Cumulative Sources of Emissions (COGCC and APCD Databases)



While the project would add to existing regional sources of pollution (i.e. background sources), the projects overall contribution within the regional context is negligible. Given the proximity to other regional sources, it is highly probably (based on modeling scenarios conducted for similar small oil and gas projects) that project emissions would not produce a common area of pollutant influence with any other area sources. Simply stated, project emissions are unlikely to communicate (i.e they are mutually exclusive) with nearby sources, such that impacts from, or to any nearby sources would not be expected to cause an exceedances of any NAAQS or significantly impact an AQRV at any Class 1 area above the data analysis threshold (DAT).

With respect to cumulative GHG emissions and the associated projected Climate Change impacts, the following predictions were identified by the EPA for the Mountain West and Great Plains regions: (<http://www.epa.gov/Region8/climatechange/pdf/ClimateChange101FINAL.pdf>):

- The region will experience warmer temperatures with less snowfall.
- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations.
- Earlier snowmelt means that peak stream flow will be earlier, weeks before the peak needs of ranchers, farmers, recreationalist, and others. In late summer, rivers, lakes, and reservoirs will be drier.
- More frequent, more severe, and possibly longer-lasting droughts will occur.
- Crop and livestock production patters could shift northward; less soil moisture due to increased evaporation may increase irrigation needs.
- Drier conditions will reduce the range and health of ponderosa and lodge pole pine forests, and increase the susceptibility to fire.
- Grasslands and rangelands could expand into previously forested areas.
- Ecosystems will be stressed and wildlife such as the mountain line, black bear, long-nose sucker, marten, and bald eagle could be further stressed.

If these predictions are realized as mounting evidence suggests is already occurring, there could be impacts to resources within the region. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils.

Protective/Mitigation Measures:

CCI Paradox Upstream LLC (CCI), would use industry best practices, including watering, graveling, and reseeded to reduce fugitive dust emissions from vehicular traffic and disturbed surfaces. Interim reclamation and existing agricultural practices will be implemented in order to stabilize the site and prevent fugitive dust from being generated. In addition the following BLM requirements will apply:

- CCI will apply for process equipment permits from CDPHE in accordance with any applicable requirements. The company shall adhere to any required emissions standards to limit the facility's potential to emit and comply with any permit operating, monitoring, and recordkeeping requirements (standard compliance clause).
- All drill rig and hydraulic fracturing pump engines employed for this project will be required to meet EPA Non-Road Tier II Emissions Standards (operator committed – design feature).
- CCI or its agents will control completion emissions by flare, with no less than a 75% total capture and control efficiency (operator committed – design feature).
- CCI or its agents will control fugitive dust such that visible emissions are not transported off-site, or cause a nuisance as defined in APCD AQCR No. 1.

It is expected that the operator will comply with these requirements and make every effort to minimize emissions through good engineering and operating practices to the maximum extent practical.

4.4.2.2 Recreation

The Cumulative Impact Assessment Area (CIAA) for recreation resources is the boundaries of Colorado Parks and Wildlife Game Unit (GMU) 70. This area was chosen because the impacts to recreation associated with this action are tied primarily to hunting and access. Improved road access for well pad construction, and pipeline construction if the well is productive, would increase access for recreation in the area. This is a potential benefit to recreationists and would presumably increase recreation use. However, the risk of damage from off-road vehicle use is increased with better access and the detrimental effects of this damage could be substantial. The proposed design features and COAs are intended to minimize the risk of damage during recreation use. However, GMU 70 includes approximately 700,000 acres of publically accessible land. The project area, interpreted broadly, could affect recreational access across approximately 2,500 acres. As such, there would be no measurably cumulative impacts to recreation as a result of either the alternative.

4.4.2.3 Visuals

Past exploration and development activities associated with oil, gas, and uranium has resulted in a landscape pitted and criss-crossed by partially healed disturbances which have primarily impacted the vegetative component of the area. "Abandoned" well pads and exploration routes have created openings and edges in the vegetation that have not been fully reabsorbed by trees and shrubs. Current use of some of these same features by recreational use (driving and hunting) and grazing operations have kept some of these areas (roads, primarily) clear of all vegetation. Future development associated with oil and gas activities, and increased use of linear disturbances (roads, primitive roads, exploration routes) by recreational and grazing pursuits would likely increase the evidence and noticability of vegetative openings and edges. The proposed action would minimally contribute to these cumulative effects through increased use

and maintenance of existing roads and primitive roads. Additionally, the existing, partially reclaimed well pad would be subjected to re-entry, redefining the vegetative edge effect. However, the design features and COAs which minimize new disturbance and which maximize the utilization of existing disturbance greatly reduce visual impacts both directly and cumulatively to the watershed.

4.4.2.4 Threatened, Endangered, and Candidate Plant and Wildlife Species

While there are no threatened or endangered species currently known to occur in the project area, the project area contains mapped critical habitat for the Gunnison sage-grouse. However the habitat is currently unoccupied and in its current condition does not provide the sagebrush density needed for the species' long-term survival. Future development from mineral extraction activities would increase habitat conversion to industrial uses and increase human disturbance from road traffic further reducing the suitability and availability of this proposed critical habitat.

4.4.2.5 Migratory Birds

Road, pipeline construction, seismic exploration and grazing in the project area are the main past activities that have altered bird habitats. Based on San Miguel County road data, 34 miles of two-track roads exist within the watershed. Cumulative impacts to migratory birds from the proposed action would result from the long-term conversion of approximately 3.3 acres of piñon and juniper woodland in the TUAs and the aboveground pipeline ROW to grasses and shrubs. Future development activities may contribute incrementally to the fragmentation of bird habitats. However, these would not be expected to cause measurable bird population declines. The proposed Design Features and COAs such as nest surveys and active nest avoidance buffers would also minimize cumulative effects to migratory birds.

4.4.2.6 Water Resources

Based on the dispersed nature of the proposed mineral development activities and the lack of flowing streams near the project area, it is not anticipated that cumulative effects of past, present, and future activities within the project area would cause regulatory thresholds to be exceeded for surface water or groundwater. Implementation of project-specific Design Features and COAs would minimize effects to surface and groundwater. Future oil and gas development would be restricted by BLM NEPA and COAs to protect surface and groundwater quality.

4.5 Residual Effects

If the Proposed Action is approved and the well is determined to be productive, the natural gas and oil would be extracted. The oil and/or gas generated from the project would be transported to out-of-state markets. Because the oil and/or gas would not regenerate, the extraction would be an irreversible commitment.

5. Consultation and Coordination

5.1 Introduction

Appendix A, the IDT checklist, identifies those issues analyzed in detail in Chapters 3 and 4, and also provides the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in Sections 5.2 and 5.3, with input from the BLM resource specialists outlined in Table 10.

5.2 Persons, Groups, and Agencies Consulted

The following persons provided information on resource concerns and project design descriptions.

Table 14. List of all Persons, Agencies and Organizations Consulted for Purposes of this EA

Name	Purpose & Authorities for Consultation or Coordination
Matt Hammond	District Wildlife Manager, Colorado Parks and Wildlife
Mike Horner	San Miguel County Roads Superintendent
Dave Schneck	San Miguel County Environmental Health Director
Chrissy Schaffner	Regulatory Affairs, CCI
Jay Allen	Pipeline Foreman, CCI
Danny White	Construction Foreman, CCI
Ron Rennke	Surveyor, William H. Smith Surveying Consultants

5.3 Summary of Public Participation

During preparation of the EA, the public was notified of the Proposed Action by posting on the BLM Tres Rios Field Office's NEPA Register (http://www.blm.gov/co/st/en/BLM_Information/nepa/TRFO_NEPA.html). The Proposed Action was posted on this register on October 1, 2013.

A public comment period was offered between April 9, 2014 and May 9, 2014. Three comments were received, one from Colorado Parks and Wildlife, one from San Miguel County Roads department, and one from a private citizen. One commentor suggested making the access road to the well pad administrative use only, however, since the road is currently open and recreation activity levels won't likely change with development, the road will remain open. One commentor suggested some minor changes to how the pipeline is constructed near county roads, and a Condition of Approval was added to require these changes. One commentor relayed concerns about air quality while drilling an earlier well in the area, and asked how those problems could be prevented. While it is difficult to know what caused the concerns of the

previous well, this project is over a mile from any households and has design features, such as closed loop drilling and flaring of flowback gasses, to minimize air quality impacts.

5.4 List of Preparers

This EA was prepared by Ecosphere Environmental Services (Ecosphere) according to direction from BLM staff. The following agency employees participated on the interdisciplinary team, reviewed and edited the EA.

Table 15. List of BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Tracy Perfors	Natural Resource Specialist	Project Manager
Chad Meister	Natural Resource Specialist	Air
Julie Bell	Archaeologist	Cultural; Native American Religious Concerns
Kelly Palmer	Hydrologist	Farmlands, Floodplains; Soils; Water Resources/Quality
Nathaniel West	Wildlife Biologist	Wildlife; Migratory Birds; Special Status Animal Species; Threatened, Endangered or Candidate Animal Species; Wetlands
Mike Jensen	Botanist	Invasive Species/Noxious Weeds; Rangeland; Special Status Plant Species; Threatened, Endangered or Candidate Plant Species; Vegetation
David Epstein	Economist	Environmental Justice; Socio-Economics
Harrison Griffin	Realty Specialist	Lands/Access
Jeff Christenson	Outdoor Recreation Planner	Lands with Wilderness Characteristics; Recreation; Visual; Wild and Scenic Rivers; Wilderness/Wilderness Study Areas
John Pecor	Petroleum Engineer	Mineral Resources; Waste
Jamie Blair	Paleontologist	Paleontology

Table 16. Non-BLM Preparers

Name	Title and Company	Responsible for the Following Section(s) of this Document
Mike Fitzgerald	Principal, Ecosphere	Project Manager
Aimee Way	Wildlife Biologist, Ecosphere	Assistant Project Manager, Chapters 1 and 2; Migratory Birds; Threatened, Endangered and Candidate Animal Species; Visual Resources
Hondo Brisbin	Botanist, Ecosphere	Vegetation; Threatened, Endangered and Candidate Plant Species
Matthew Smith	Ecologist, Ecosphere	Cultural Resources; Recreation; Paleontology; Soils; Water Resources and Quality
Laura Getts	GIS Specialist, Ecosphere	Visual Resources
Carl Conner	Archaeologist, Grand River Institute	Cultural; Native American Religious Concerns
Josh Smith	Paleontologist, Western Slope Paleontological Services, Ltd.	Paleontology
Mike Wilder	Biologist, Grasslands Consulting, Inc.	Special Status Plant Species; Threatened, Endangered or Candidate Plant Species; Vegetation; Raptors

6. References

- Anderson, D. G. Colorado Natural Heritage Program. 2004. Population Status Survey of Schmoll's Milkvetch (*Astragalus schmolliae* C. L. Porter), Final Report submitted to the National Park Service, Mesa Verde National Park.
- Bureau of Land Management (BLM). 1985. San Juan/San Miguel Planning Area Resource Management Plan. Montrose District, CO.
- Bureau of Land Management (BLM). 1991. San Juan/San Miguel Resource Management Plan Amendment. Montrose, CO.
- Bureau of Land Management (BLM). 2007. Hydraulic considerations for pipelines crossing stream channels. Technical Note 423. BLM/ST/ST-07/007+2880. Bureau of Land Management, National Science and Technology Center, Denver, CO. 20 pp. <http://www.blm.gov/nstc/library/techno2.htm>.
- Bureau of Land Management (BLM). 2013a. Terrestrial and Aquatic Wildlife Species to Consider for All Ground Disturbing Activities. List of species obtained from USFWS, December 10, 2013.
- Bureau of Land Management (BLM). 2013b. Visual Resources Inventory, BLM, Tres Rios Field Office. Dolores, CO.
- Grand River Institute (GRI). 2013a. Class III Cultural Resource Inventory for the Proposed Pipeline to the Summit Point Federal #1 Well Location in San Miguel County, Colorado, for Patara Oil and Gas, LLC. Submitted to BLM-Tres Rios Field Office: Dolores, CO.
- Grand River Institute (GRI). 2013b. Class III Cultural Resource Inventory for a Proposed Alternate Route for Summit Point Federal #1 Pipeline in San Miguel County, Colorado, for CCI. Submitted to BLM-Tres Rios Field Office: Dolores, CO.
- Grasslands Consulting, Inc. 2013a. Special Status Plant Species and Vegetation Report. Submitted to BLM-Tres Rios Field Office: Dolores, CO.
- Grasslands Consulting, Inc. 2013b. Nesting Raptor Survey Report. Submitted to BLM-Tres Rios Field Office: Dolores, CO.
- Inventory of US Greenhouse Gas Emissions and Sinks: 1990–2008 (EPA 2010a) EPA Emissions
- Natural Resources Conservation Service, United States Department of Agriculture (NRCS). 2014. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed January 16, 2014.
- U.S. Department of the Interior and United States Department of Agriculture (USDI/USDA). 2007. Surface and Operating Standards and Guidelines for Oil and Gas Exploration and Development. BLM/WO/ST-06/021+0371/REV 07. Denver, Colorado. 84 pp.

- United States Geological Society (USGS). 2008. National Hydrography Dataset, High Resolution. Reston, Virginia, USA: U.S. Geological Society.
- U.S. Fish and Wildlife Service (USFWS). 2013a. Endangered Status for Gunnison Sage-Grouse: Proposed Rule. Federal Register (FR) 2486 Volume 78, Number 8, Published January 11, 2013.
- U.S. Fish and Wildlife Service (USFWS). 2013b. Designation of Critical Habitat for Gunnison Sage-Grouse: Proposed Rule. Federal Register (FR) 2540 Volume 78, Number 8, Published January 11, 2013.
- U.S. Fish and Wildlife Service (USFWS). 2008. Programmatic Biological Opinion for Water Depletions Associated with Bureau of Land Management's Fluid Mineral Program within the Upper Colorado River Basin in Colorado. USFWS, Grand Junction, CO. 78 pp.
- Western Slope Paleontological Services, Ltd. (WSP) 2013. Paleontological Resource Survey Report for the Proposed Patara Oil and Gas "Summit Point Federal #1" Well Pad and Pipeline in San Miguel County, Colorado With Amendment for Pipeline Reroute. Submitted to BLM-Tres Rios Field Office: Dolores, CO.

Appendix A BLM Conditions of Approval

BLM Conditions of Approval (COA)

In the COAs below, “the applicant” refers to CCI Paradox Upstream, LLC and any of its employees, contractors and subcontractors. The BLM Authorized Officer (AO) refers to Tracy Perfors at 970-882-6856.

- 1) All pipeline activities must occur within the 200 foot corridor previously surveyed and within the footprint of the well pad area that was previously surveyed.
- 2) Within the surveyed areas, all cultural site boundaries will be clearly marked by an archaeologist (cultural resource consultant). All material used to mark cultural sites for avoidance will only be removed by an archaeologist (cultural resource consultant) within 10 days after the completion of construction.
- 3) All work, staging, and parking of equipment will be confined to the well pads, roads and pipeline ROW. No pullouts or off-road parking will be allowed unless specifically authorized. “Keep vehicles on the road surface” signs must be installed by the operator to assist with compliance, as needed. No shortcutting by any motor vehicles operated by employees or contractors is permitted on roads not identified as access routes in the APD. Vehicular access to the pads will be strictly limited to authorized vehicles only; these vehicles are restricted to use on the drill pad only; no off-pad or off-road parking.
- 4) All employees of the applicant and any subcontractors will be informed by the applicant before commencement of the project that any disturbance to, defacement of, or removal of archaeological, historical, or sacred material will not be permitted. Violation of the laws that protect these resources will be treated as law enforcement issue and violators will be prosecuted. At a minimum, the permitted archaeological consultants will conduct “tail-gate” sessions (informal field sessions) to emphasize to subcontractors and all field personnel the sensitivity of cultural resources and their statutory responsibilities when operating on federal lands. New employees hired during the course of the project must get the same briefings prior to beginning work in the field. Applicants will be held accountable for the conduct of their employees and subcontractors in this regard.
- 5) All ground disturbing activities will be monitored by a permitted archaeological consultant. For construction of above-ground pipeline, only identified sites must be monitored, not the areas in between. If subsurface cultural artifacts are uncovered during the project, all work in the vicinity of the resource will cease and the applicant will notify the BLM AO immediately. The applicant shall take any additional measures requested by the BLM to protect discoveries until they can be adequately evaluated by a permitted archaeologist. Within 48 hours of the discovery, the State Historic Preservation Office (SHPO) and consulting parties will be notified of the discovery.
- 6) If human remains, funerary items, sacred objects, or objects of cultural patrimony are discovered, the applicant will stop work in the vicinity of the discovery and notify the BLM

AO immediately, pursuant to 43 CFR 10.4(c, d, g). The discovery will be protected by the BLM and the applicant for 30 days or until the applicant is notified by the BLM AO.

- 7) An on-the-ground applicant field agent(s) will be responsible for communicating with the permitted archaeological consultant and directing established avoidance procedures in coordination with the BLM. The BLM archaeologist may conduct random field-checks of all operations to ensure that the applicant is in compliance with site avoidance measures. The applicant-designated field agent will be responsible for notifying the BLM AO and the permitted archaeological consultant of any cultural discoveries made during operations.
- 8) The applicant shall take any additional measures requested by the BLM during the course of operations to provide adequate levels of site protection. These may include but are not limited to:
 - a. Additional archaeological monitors in sensitive areas
 - b. Weather restrictions
 - c. More frequent compliance checks
 - d. Site fencing or restrictive use barriers
 - e. Site damage evaluations
 - f. Verification of site locations
 - g. Special avoidance or reclamation measures to reduce erosion or discourage vandalism
- 9) The operator will control flow back gasses via a flare.
- 10) To clarify Design Feature # 13, for construction on the well pad, pipeline, and roads, all heavy equipment will be pressure washed at an offsite location prior to entering the project area. This is a preventative measure for reducing noxious weed infestation and pertains to heavy earth-moving equipment such as motor graders, bulldozers, backhoes, etc. Pickup trucks and passenger vehicles do not need to be pressure washed prior to entering the project area.
- 11) A paleontological monitor (properly credentialed and registered) must be present during trenching operations associated with the buried pipeline installation. Monitoring is needed on the well pad if the solids/blooiie pit is installed as excavation would disturb bedrock of the Cretaceous Dakota Formation. If, while monitoring trenching operations, it is evident that only Quaternary alluvium deposits will be encountered, the paleontologist may end the monitor under the condition that the applicant immediately notifies the paleontologist if bedrock of the Morrison Formation is again encountered during trenching operations so that the paleontologist may continue monitoring construction. If the monitors find vertebrate fossils of scientific significance during excavation, they should contact the BLM AO immediately, and cease excavation in the vicinity of the discovery, until BLM can determine how best to catalogue, preserve, and/or avoid the resource(s) in question.
- 12) For the section of pipeline in T44N, R19W, Sec 31, from the cliff top to County Rd 4R, any tree trunks, boulders, etc., removed from the reclaimed road during pipeline construction or pipeline maintenance will be placed back, and the road will be seeded with a BLM-approved

seed mix. The applicant will place signs reading “Reclamation Area – Please Keep Off” at each end of this ROW section.

- 13) To meet San Miguel County request, the pipeline will be buried a minimum of 48 inches deep across county roads.
- 14) The Southern TUA should be set-back from the rim approximately 50 feet, leaving trees directly on the edge to provide visual screening. The boundary of Cultural site 5SM.4948 will be marked, and the TUA will avoid the marked area. Minimal trees would be cleared between the two TUAs in the area where the pipe would be pulled. Trees, logs, and rocks should be pulled back into the ROW, temporary access, and northern TUA. The temporary access to the northern TUA midway up the slope should be reclaimed after construction. All above-ground steel pipeline should be left to oxidize naturally, and removed upon final reclamation.
- 15) Culverts at stream crossings or for road and pipeline cross drainage will be 18 inch minimum diameter and will be sized to accommodate the amount of water that would flow down the stream (a 25 year recurrence interval event or greater). All culverts used in the construction of access roads or pipeline crossings will be concrete, corrugated metal pipe made of steel, or properly bedded and backfilled corrugated plastic pipe. Only undamaged culverts shall be used.
- 16) Construction across ephemeral, intermittent, and perennial drainages shall not occur during spring runoff i.e. when flows are present from snowmelt events. For this project, all streams within the ROW should not be flowing spring runoff when construction is occurring in or near the channel.
- 17) Equipment shall not be refueled within 100 feet of drainage channels, springs, seeps or wetlands.
- 18) During the construction phase of the project, the applicant will monitor all Colorado Stormwater Construction Permit mitigation measures and BLM mitigation measures designed to detain pollutants and sediment and spill containment measures within 2 days after every rapid snowmelt or heavy rainfall event greater than 1 hour in duration precipitation. If ponds/filtration dams/wattles/sediment fences and other similar stormwater control measures are full of water and/or sediment, these structures must be cleaned or rebuilt promptly (within 5 days) so they continue to function effectively. Uncontaminated sediment emptied from these structures will be placed within the construction ROW in sites approved by BLM. Contaminated sediment and water will be disposed of at an approved waste disposal facility.
- 19) If fill is placed in ephemeral channels temporarily, a culvert of at least 18 inches must be placed in the fill. The bottom of the culvert should be flush with the channel bottom to allow passage of water in these draws. The fill must be removed immediately after construction, and the original channel and bank dimensions must be restored.
- 20) No surface disturbing activity will be allowed from May 1 through June 30, annually, to protect nesting migratory birds. If construction is scheduled to occur between May 1 and

June 30, migratory bird nest searches are required prior to any ground disturbance where nesting habitat occurs in the proposed project area. If active nests were found, vegetation removal would be postponed until after the nest successfully fledges young or fails, as determined by a BLM-approved biologist. With the approval of the BLM AO, a biological monitor may be present during construction to avoid nest destruction/disturbance. If vegetation clearing is scheduled to occur from July 1 to April 31, no migratory bird surveys are needed.

- 21) No surface disturbing activity will be allowed within ½ mile of documented active raptor nests from March 1 through July 31, annually. This limitation does not apply if a raptor nest occupancy survey was completed by the BLM or a BLM-approved biologist during the breeding season in the year of construction, and showed no nesting activity. This timing limitation applies to construction, drilling, completions operations, placing of production equipment, and associated infrastructure to include roads, pipelines, power lines, etc.
- 22) To clarify Design Feature # 25, If any dead or injured threatened, endangered, proposed, candidate or sensitive species is located during construction or operation, the BLM AO shall be notified within 24 hours.
- 23) Observations of any threatened, endangered, proposed, or candidate species within the project area shall be reported to the BLM AO.
- 24) Stormwater controls will be implemented, inspected, and maintained for full function for all temporary roads as well as the flowline/production line for the life of the project. Inadequate stormwater controls as evidenced by erosion, cutting, soil loss, or sediment transport off site will require additional stormwater control measures. These stormwater controls should be designed and sized at a minimum for the 25-year storm event.
- 25) Pipeline construction and permanent/temporary road construction will not block, dam, or change the natural course of any drainage.
- 26) Suspended pipelines should provide adequate clearance for high-flow events, floating debris, wildlife or livestock.
- 27) The following seed mix will be used for reclamation:

Seed Mixture Species	Variety	Pounds Pure Live Seed per Acre
Indian Ricegrass	Paloma	1.6
Needle and Thread	VNS	3.7
Sand Dropseed	VNS	0.1
Big sagebrush	VNS	0.1
Bottle Brush Squirreltail	Tusas	1.4
TOTAL		6.9